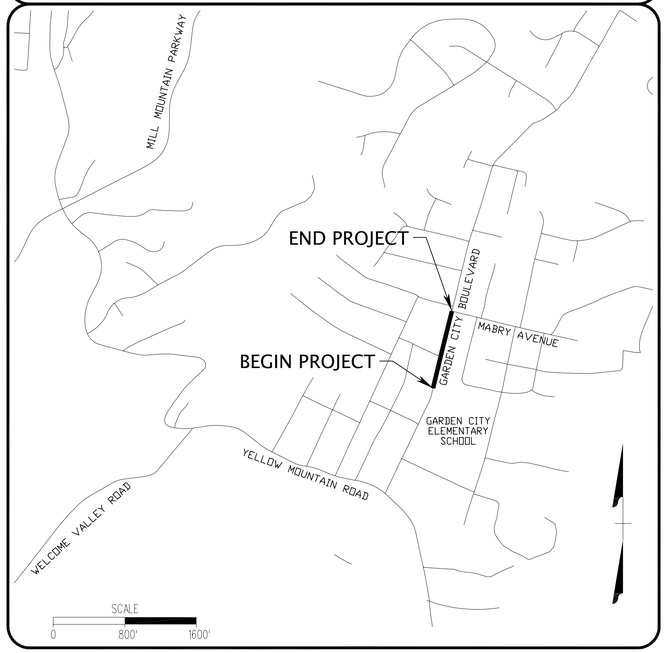
PROJECT LOCATION MAP



ROANOKE

OFFICE OF THE CITY ENGINEER
215 CHURCH AVENUE, SW
ROOM 350
ROANOKE, VIRGINIA 24011-1587
PHONE: (540) 853-2731
FAX: (540) 853-1364
ENGINEER@ROANOKEVA.GOV

INDEX OF SHEETS

NOTICE: ALL LANDOWNERS, DEVELOPERS AND CONTRACTORS

FAILURE TO COMPLY WITH THE CONSTRUCTION PROCEDURE REQUIREMENTS LISTED BELOW MAY RESULT IN THE COSTLY REMOVAL OF STRUCTURES, TIME DELAYS OR THE ISSUANCE OF A STOP WORK ORDER.

CONSTRUCTION PROCEDURE REQUIREMENTS

1. RIGHT-OF-WAY EXCAVATION PERMIT - PRIOR TO THE COMMENCEMENT OF ANY DIGGING, ALTERATION OR CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY (STREETS, ALLEYS, PUBLIC EASEMENTS), A RIGHT-OF-WAY EXCAVATION PERMIT SHALL BE APPLIED FOR AND OBTAINED BY THE CONTRACTOR FROM THE CITY OF ROANOKE.
2. LAND DISTURBANCE PERMIT - AN APPROVED EROSION AND SEDIMENT CONTROL PLAN FOR ANY BORROW/FILL SITES ASSOCIATED WITH THE PROJECT MUST BE SUBMITTED PRIOR TO THE ISSUANCE OF A LAND DISTURBANCE PERMIT.
3. PLANS AND PERMITS - A COPY OF THE PLANS AS APPROVED BY THE CITY (SIGNED BY THE PROPER CITY OFFICIALS) AND ALL PERMITS ISSUED BY THE CITY SHALL BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES OF ONGOING CONSTRUCTION.
4. LOCATION OF UTILITIES - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
5. CONSTRUCTION ENTRANCE - THE CONTRACTOR SHALL INSTALL AN ADEQUATE CONSTRUCTION ENTRANCE FOR ALL CONSTRUCTION RELATED EGRESS FROM THE SITE. SIZE AND COMPOSITION OF CONSTRUCTION ENTRANCE SHALL BE AS SHOWN ON THE PLANS.
6. STREETS TO REMAIN CLEAN - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT THE PUBLIC STREET ADJACENT TO THE CONSTRUCTION ENTRANCE REMAINS FREE OF MUD, DIRT, DUST, AND/OR ANY TYPE OF CONSTRUCTION MATERIALS OR LITTER AT ALL TIMES.
7. BARRICADES/DITCHES - THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXCAVATED DITCHES AND SHALL FURNISH AND ENSURE THAT ALL BARRICADES PROPER AND NECESSARY FOR THE SAFETY OF THE PUBLIC ARE IN PLACE.
8. SEWER AND PAVEMENT REPLACEMENT - CONSTRUCTION OF SANITARY SEWERS AND THE REPLACEMENT OF PAVEMENT SHALL BE IN ACCORDANCE WITH APPROVED STANDARDS AND SPECIFICATIONS OF THE CITY OF ROANOKE AND THE WESTERN VIRGINIA WATER AUTHORITY.
9. APPROVED PLANS/CONSTRUCTION CHANGES - ANY CHANGE OR VARIATION FROM CONSTRUCTION DESIGN AS SHOWN ON THE OFFICIALLY APPROVED PLANS SHALL BE APPROVED BY THE EROSION AND SEDIMENT CONTROL AGENT PRIOR TO SAID CHANGES OR VARIATION IN CONSTRUCTION BEING MADE.
10. FINAL ACCEPTANCE/CITY - THE OWNER OR DEVELOPER SHALL FURNISH THE CITY OF ROANOKE'S PLANNING BUILDING AND DEVELOPMENT DEPARTMENT WITH A FIELD SURVEYED FINAL CORRECT SET OF AS-BUILT PLANS OF THE NEWLY CONSTRUCTED STORM DRAIN AND/OR STORMWATER MANAGEMENT FACILITIES PRIOR TO FINAL ACCEPTANCE AND ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE CITY. AS-BUILT PLANS SHALL BE PROVIDED IN THE STATE PLANE VIRGINIA SOUTH COORDINATE SYSTEM, NAD 1983, FIPS 4502 FEET, US SURVEY FEET, DATUM NA 83, IN THE FORM OF 1 PAPER COPY AND 1 DIGITAL AUTOCAD FILE.

UTILITY CONTACT NUMBERS:

APPALACHIAN POWER COMPANY
40 FRANKLIN ROAD, SW
ROANOKE, VA 24100
800-956-4237

COX BUSINESS
5400 FALLOWWATER LANE, SW
ROANOKE, VA 24018
540-777-4753

WESTERN VIRGINIA WATER AUTHORITY
601 S. JEFFERSON STREET, SUITE 200
ROANOKE, VA 24011
540-853-5700

ROANOKE GAS COMPANY
519 KIMBALL AVENUE
ROANOKE, VA 24015
540-777-4427

APPROXIMATE DISTURBED PROJECT AREA = 0.08 AC = 3490 SF
APPROXIMATE NET PROJECT IMPERVIOUS AREA REDUCTION = 0.03 AC = 1140 SF

PROJECT NAME

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD
(PHASE I)
TAX MAP 9999998

PLAN NUMBER: 6764

VDOT PROJECT NUMBER: SRTS-128-323, P101, C501

VDOT UPC: 102856

CITY PLANNING NUMBER: TBD

FEDERAL PROJECT NUMBER: SRTS-5128(321)

REVISION BY	DESCRIPTION:	DATE

APPROVED FOR CONSTRUCTION

PARKS AND GREENWAYS PLANNER	DATE
DIRECTOR OF PARKS AND RECREATION	DATE
ASSISTANT CITY MANAGER OF COMMUNITY DEVELOPMENT	DATE

SHEET NUMBER: CS

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

EXIST. SAN. SEWER STRUCTURE TABLE

(A.D.) = APPROXIMATE PIPE DIRECTION SHOWN HEREON.

(C.O.) = CLEANOUT

SAN MH # 2021
TOP= 1124.30'
INV IN (S)= 1114.00' (8" D.I. TO APPROX. PAVED OVER MH)
INV OUT (N)= 1113.92' (8" D.I. TO # 2022)

SAN MH # 2022
TOP= 1119.07'
INV IN (S)= 1107.12' (8" D.I. TO # 2021)
INV OUT (N)= 1106.89' (8" D.I. TO # 2023)

SAN MH # 2023
TOP= 1109.02'
INV IN (S)= 1097.83' (8" D.I. TO # 2022)
INV IN (E)= 1099.12' (A.D. 8" D.I.)
INV OUT (N)= 1097.77' (8" D.I. TO # 2024)

SAN MH # 2024
TOP= 1098.66'
INV IN (S)= 1088.00' (8" D.I. TO # 2023)
INV IN (E)= 1088.51' (A.D. 6" D.I.)
INV OUT (N)= 1087.92' (8" D.I. TO # 2025)

SAN MH # 2025
TOP= 1099.05'
INV IN (S)= 1086.55' (8" D.I. TO # 2024)
INV OUT (N)= 1086.42' (8" D.I. TO # 2026)

SAN MH # 2026
TOP= 1096.59'
INV IN (S)= 1084.97' (8" D.I. TO # 2025)
INV IN (W)= 1086.45' (4" D.I. TO # C.O.)
INV OUT (N)= 1084.93' (8" D.I. TO # 2027)

SAN MH # 2027
TOP= 1082.31'
INV IN (S)= 1070.58' (8" D.I. TO # 2026)
INV OUT (N)= 1070.41' (8" D.I. TO # 2028)

SAN MH # 2028
TOP= 1070.12'
INV IN (S)= 1060.60' (8" D.I. TO # 2027)
INV IN (E)= 1061.04' (6" PVC TO C.O.)
INV OUT (N)= 1060.51' (8" D.I. TO # 2029)

SAN MH # 2029
TOP= 1061.50'
INV IN (S)= 1048.70' (8" D.I. TO # 2028)
INV OUT (N)= 1048.61' (8" D.I. TO # 2030)

SAN MH # 2030
TOP= 1058.92'
INV IN (S)= 1047.18' (8" D.I. TO # 2029)
INV OUT (N)= 1047.12' (8" D.I. TO # 2041)

SAN MH # 2041
TOP= 1046.07'
INV IN (S)= 1035.22' (8" D.I. TO # 2030)
INV OUT (N)= 1035.14' (8" D.I. TO # 2042)

SAN MH # 2042
TOP= 1043.58'
INV IN (S)= 1031.36' (8" D.I. TO # 2041)
INV OUT (N)= 1031.29' (8" D.I. TO # 2043)

SAN MH # 2043
TOP= 1037.98'
INV IN (S)= 1026.10' (8" D.I. TO # 2042)
INV OUT (N)= 1026.04' (8" D.I. TO # 2044)

SAN MH # 2044
TOP= 1034.14'
INV IN (S)= 1023.09' (8" D.I. TO # 2043)
INV IN (NW)= 1029.74' (6" PVC TO C.O.)
INV OUT (N)= 1023.06' (8" D.I. TO # 2045)

SAN MH # 2045
TOP= 1026.99'
INV IN (S)= UNOBTAINABLE
INV OUT (N)= UNOBTAINABLE
(PAVED OVER, UNABLE TO OPEN MANHOLE)

SAN MH # 2046
TOP= 1006.87'
INV IN (S)= 998.71' (8" D.I. TO # 2045)
INV IN (W)= 998.77' (8" D.I. TO # 2047)
INV OUT (N)= 998.57' (8" D.I. TO # 2048)

SAN MH # 2047
TOP= 1030.72'
INV IN (W)= 1026.97' (A.D. 4" D.I.)
INV IN (NW)= 1026.52' (A.D. 4" PVC)
INV IN (SW)= 1026.44' (A.D. 6" PVC)
INV OUT (E)= 1020.44' (8" D.I. TO # 2046)

SAN MH # 2048
TOP= 984.03'
INV IN (S)= 973.14' (8" D.I. TO # 2046)
INV IN (SE)= 973.11' (A.D. 8" D.I.)
INV OUT (N)= 973.07' (A.D. 10" D.I. TO OFFSITE)

EXIST. PAVEMENT TO BE REMOVED

EXIST. CURB TO BE REMOVED

PHASE I

PHASE I

LEGEND:

- EXIST. TELEPHONE PEDESTAL
- EXIST. FIRE HYDRANT
- EXIST. GAS VALVE
- EXIST. TREE DECIDIOUS
- EXIST. ELECTRIC BOX
- EXIST. GUY WIRE
- EXIST. LIGHT POLE
- EXIST. MONITORING WELL
- EXIST. POWER POLE
- EXIST. BOLLARD
- EXIST. HANDICAP PARKING SPACE
- EXIST. MAILBOX
- EXIST. SIGN
- EXIST. SATELLITE DISH
- EXIST. SHRUB
- EXIST. SEWER CLEANOUT
- EXIST. SEWER MANHOLE
- EXIST. TREE CONIFER
- EXIST. STORM MANHOLE
- EXIST. PAPER BOX
- EXIST. WATER METER
- EXIST. WATER MANHOLE
- SS — EXIST. SANITARY SEWER LINE
- GAS — EXIST. GAS LINE
- EXIST. STORM DRAIN
- W — EXIST. WATER LINE
- x — EXIST. FENCE
- 1100 — EXIST. CONTOUR
- EXIST. PROPERTY LINE

EXIST. STORM STRUCTURE TABLE

(A.D.) = APPROXIMATE PIPE DIRECTION SHOWN HEREON.

GRATE INLET # 2000
TOP= 1135.19'
INV OUT (N)= 1132.36' (15" RCP TO # 2001)

GRATE INLET # 2001
TOP= 1134.88'
INV IN (S)= 1131.37' (15" RCP TO # 2000)
INV OUT (E)= 1131.20' (15" RCP TO # 2002)

GRATE INLET # 2002
TOP= 1135.17'
INV IN (W)= 1130.63' (15" RCP TO # 2001)
INV OUT (N)= 1130.54' (15" RCP TO # 2003)

STORM MH # 2003
TOP= 1131.97'
INV IN (S)= 1127.85' (15" RCP TO # 2002)
INV OUT (W)= 1127.74' (15" RCP TO # 2004)

GRATE INLET # 2004
TOP= 1130.14'
INV IN (E)= 1126.68' (15" RCP TO # 2003)
INV OUT (N)= 1126.54' (15" RCP TO # 2005)

STORM MH # 2005
TOP= 1130.17'
INV IN (S)= 1125.06' (15" RCP TO # 2004)
INV OUT (W)= 1124.99' (15" RCP TO # 2006)

STORM MH # 2006
TOP= 1130.66'
INV IN (E)= 1122.79' (15" RCP TO # 2005)
INV OUT (N)= 1122.70' (15" RCP TO # 2007)

STORM MH # 2007
TOP= 1122.74'
INV IN (S)= 1118.47' (15" RCP TO # 2006)
INV OUT (W)= 1115.57' (15" RCP TO # 2008)

STORM MH # 2008
TOP= 1121.34'
INV IN (E)= 1114.81' (15" RCP TO # 2007)
INV OUT (W)= 1114.74' (15" RCP TO # 2009)

STORM MH # 2009
TOP= 1120.41'
INV IN (E)= 1112.16' (15" RCP TO # 2008)
INV OUT (W)= 1112.08' (A.D. 15" RCP TO OFFSITE)

INLET # 2010
TOP= 1096.90'
INV OUT (NE)= 1093.60' (12" RCP TO # 2012)
INV IN (SE)= 1094.15' (A.D. 12" PVC)
INV IN (W)= 1093.65' (15" RCP TO # 2011)

INLET # 2011
TOP= 1096.52'
INV OUT (E)= 1094.17' (15" RCP TO # 2010)

STORM MH # 2012
TOP= 1097.73'
INV IN (SW)= 1092.17' (12" RCP TO # 2010)
INV OUT (E)= 1091.85' (A.D. 12" RCP TO OFFSITE)

INLET # 2013
TOP= 1060.20'
INV OUT (N)= 1056.76' (15" RCP TO # 2014)

STORM MH # 2014
TOP= 1058.55'
INV IN (SW)= 1056.28' (15" RCP TO # 2013)
INV OUT (W)= 1055.22' (18" RCP TO # 2015)

GRATE INLET # 2015
TOP= 1055.77'
INV IN (E)= 1052.77' (18" RCP TO # 2014)
INV OUT (W)= 1052.62' (A.D. TO OFFSITE)

INLET # 2016
TOP= 1034.36'
INV OUT (N)= 1028.43' (18" RCP TO # 2017)

STORM MH # 2017
TOP= 1032.54'
INV IN (S)= 1028.03' (18" RCP TO # 2016)
INV OUT (N)= 1027.94' (18" RCP TO # 2019)

GRATE INLET # 2018
TOP= 1030.25'
INV OUT (N)= 1027.00' (18" RCP TO OUTFALL)
INV IN (E)= 1027.27' (A.D. 8" PVC)
INV IN (SE)= 1026.97' (A.D. 4" PVC)

INLET # 2019
TOP= 1032.23'
INV IN (S)= 1027.85' (18" RCP TO # 2017)
INV IN (W)= 1027.68' (18" CMP TO # 2020)
INV OUT (E)= 1027.58' (18" CMP TO OUTFALL)

INLET # 2020
TOP= 1033.04'
INV OUT (E)= 1029.76' (18" CMP TO # 2019)

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

SCALE 0 60' 120'

ROADWAY ENGINEER

ROANOKE

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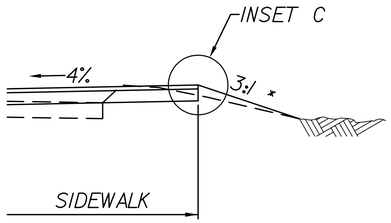
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

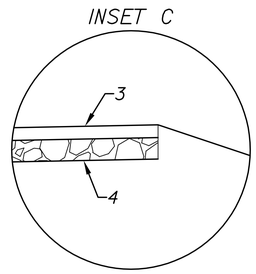
DENOTES PROPOSED DEMOLITION

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

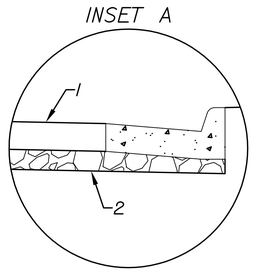
EXISTING CONDITIONS / DEMOLITION PLAN

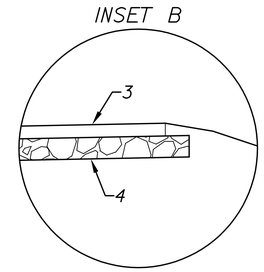
Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C1
Checked: R.D.P.		



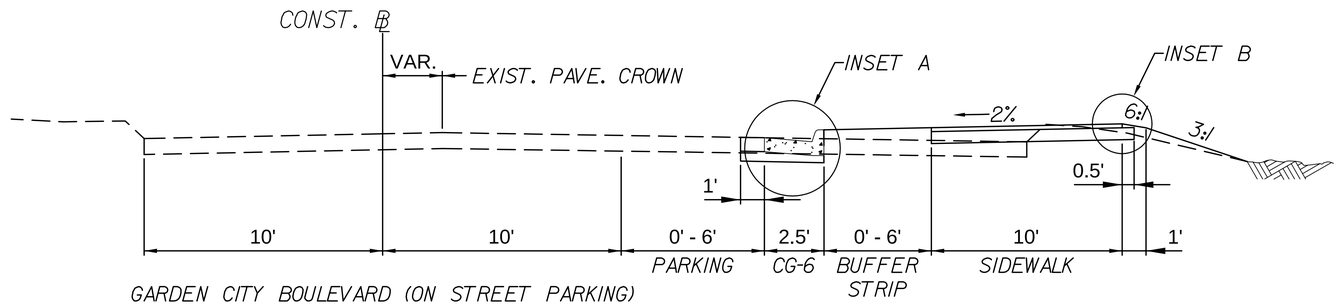


STATIONS 25+07 TO 27+75.26
* SLOPE SHALL BE 2:1 AT STATIONS 25+87 TO 27+70
NOTE: 4' SIDEWALK FROM STA. 25+86.70 TO STA. 27+75.26





1 7" ASPHALT CONCRETE TY. BM-25A
2 8" AGGR. BASE MAT'L. TY-I NO. 21-A OR B
3 2" ASPHALT CONCRETE TY. SM-9.5A
4 6" AGGR. BASE MAT'L. TY-I NO. 21-A OR B



GARDEN CITY BOULEVARD (ON STREET PARKING)
(STATIONS 23+25 TO 31+80)
N.T.S.

DRIVEWAYS

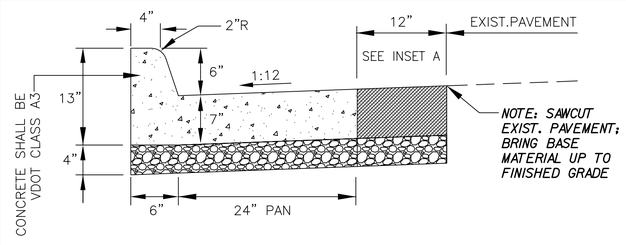
Concrete

Concrete Entrance
Pavement 7" HES
4" Aggr. Base Mat'l. Ty-I
No. 21-A or B

Asphalt

2" Asphalt Concrete
Ty. SM-9.5A
4" Aggr. Base Mat'l. Ty-I
No. 21-A or B

The type of entrance to be constructed will be determined by the existing condition at the time of construction.



STANDARD 6" CURB AND GUTTER (CG-6)
WITH ASPHALT RESTORATION NTS

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
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1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

TYPICAL SECTIONS

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	C2
Checked:	R.D.P.		

9VAC25-840-40. Minimum Standards.

This Erosion and Sediment Control Plan complies with the following criteria, techniques and methods (as adopted by the City of Roanoke) as described below:

MS-1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Response: Contractor shall comply. See Erosion and Sediment Control Measures, Sheet C4.

MS-2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

Response: The contractor shall protect/stabilize all soil stockpiles and borrow areas with proper sediment control measures including temporary silt barriers and temporary soil stabilization. These measures shall apply to all stockpile or borrow areas on or off site.

MS-3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

Response: Contractor shall comply. See Erosion and Sediment Control Measures, and Maintenance, Sheet C4.

MS-4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Response: Contractor shall comply.

MS-5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

Response: Not applicable to this project.

MS-6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

Response: Not applicable to this project.

b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

Response: Not applicable to this project.

MS-7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Response: Contractor shall comply. See Maintenance, Sheet C4

MS-8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

Response: Not applicable to this project.

MS-9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

Response: Not applicable to this project.

MS-10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Response: Not applicable to this project.

MS-11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

Response: Not applicable to this project.

MS-12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

Response: Not applicable to this project.

MS-13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

Response: Not applicable to this project.

MS-14. All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met.

Response: Not applicable to this project.

MS-15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

Response: Not applicable to this project.

MS-16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

a. No more than 500 linear feet of trench may be opened at one time.

Response: Not applicable to this project.

b. Excavated material shall be placed on the uphill side of trenches.

Response: Not applicable to this project.

c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

Response: Not applicable to this project.

d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

Response: Not applicable to this project.

e. Restabilization shall be accomplished in accordance with these regulations.

Response: Not applicable to this project.

f. Applicable safety chapters shall be complied with.

Response: Not applicable to this project.

MS-17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

Response: Contractor shall comply. See Maintenance, Sheet C4.

MS-18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Response: Contractor shall comply. See Management Strategies.

MS-19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

Response: Engineer has verified adequacy of all outfalls.

b. Adequacy of all channels and pipes shall be verified in the following manner:

(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question;

Response: Applicable to this project.

(2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

Response: Two year event has been analyzed.

(b) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

Response: Ten year storm has been analyzed.

(c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

Response: Not applicable to this project.

c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

Response: Obtain easements as necessary and upgrade channels/pipes.

d. The applicant shall provide evidence of permission to make the improvements.

Response: Easements shall be documented as necessary.

e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.

Response: Project complies with applicable requirements

f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

Response: Not applicable to this project.

g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

Response: Not applicable to this project.

h. All on-site channels must be verified to be adequate.

Response: On-site channels have been verified as adequate.

i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

Response: Not applicable to this project.

j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

Response: City shall comply.

k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

Response: Project complies; contractor shall comply with approved plans and notes herein.

l. Any plan approved prior to July 1, 2014, that provides stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act.

Response: Not applicable to this project.

m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) Regulations.

Response: Not applicable to this project.

n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) Regulations shall be deemed to satisfy the requirements of subdivision 19 of this subsection.

Response: Not applicable to this project.

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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS NOTES

Designed: D.B.D.	DATE	SHEET NUMBER
Drawn: R.D.W.	MAY 2014	C3
Checked: R.D.P.		

NARRATIVE

PROJECT DESCRIPTION:
THE PROJECT LOCATION IS THE SOUTHEAST QUADRANT OF ROANOKE CITY ALONG THE EAST SIDE OF GARDEN CITY BOULEVARD BETWEEN GARDEN CITY BAPTIST CHURCH AND MABRY AVENUE.
THE PURPOSE OF THE PROJECT IS TO CONSTRUCT A NEW "SAFE ROUTES TO SCHOOL" PEDESTRIAN WALKWAY ON THE EAST SIDE OF GARDEN CITY BOULEVARD, WHICH WILL SERVE GARDEN CITY ELEMENTARY SCHOOL. ASSOCIATED WORK INCLUDES NEW CURB AND GUTTER AND MINOR UTILITY RELOCATION AS NECESSARY. ROADWAY MILLING AND PAVING WILL BE NECESSARY FOLLOWING PROJECT CONSTRUCTION AND WILL BE ACCOMPLISHED BY THE CITY'S TRANSPORTATION DIVISION AS PART OF A SEPARATE PROJECT.
THIS PROJECT MEETS THE REQUIREMENTS OF THE ROANOKE CITY STORMWATER MANAGEMENT (SWM) ORDINANCE (REVISED APRIL 2012), FOR LINEAR PROJECTS, SO THAT NO POST DEVELOPMENT STORMWATER MANAGEMENT IS REQUIRED FOR THIS PROJECT.

EXISTING SITE CONDITIONS:
GARDEN CITY BOULEVARD IS A TWO LANE (ONE EACH WAY) COLLECTOR STREET IN A MOSTLY RESIDENTIAL AREA. THE ROAD LACKS STORM DRAINAGE PIPES AND IS A MIX OF CURBED AND UNCURBED SECTIONS. THIS SITE CURRENTLY OUTFALLS DOWN MABRY AVE. AS CURB AND GUTTER FLOW AND MERGES WITH THE GARNAND BRANCH.

ADJACENT PROPERTY:
ADJACENT PROPERTIES ARE PRIVATE RESIDENCES AND A CHURCH. THE ROAD DRAINS TO THE GARNAND BRANCH ON THE EAST SIDE. THE PROJECT HAS NO STREAM CROSSINGS OR FLOODPLAIN IMPACTS

OFF SITE AREAS:
THIS PROJECT REQUIRES ONLY SMALL STORAGE AREAS FOR EXCAVATED MATERIALS. IF THE CONTRACTOR REQUIRES AN OFFSITE DISPOSAL/STOCKPILE AREA, A SUPPLEMENTAL EROSION AND SEDIMENT CONTROL PLAN SHALL BE SUBMITTED TO AND APPROVED BY THE CITY PRIOR TO ANY OFFSITE LAND DISTURBING ACTIVITIES. CONTRACTOR IS TO PROVIDE THIS AT THE PRE-CONSTRUCTION MEETING.

SOIL:
THE PROJECT AREA CONSISTS OF "HAYESVILLE-URBAN" (SOIL UNIT 29C) SOILS ALONG THE ENTIRE PROJECT. THESE SOILS ARE DEEP SOILS COMPOSED OF WEATHERED GRANITE AND ARE IN HYDROLOGIC GROUP B.

CRITICAL EROSION AREAS:
NO CRITICAL AREAS EXIST WITHIN THE PROJECT LIMITS.

EROSION AND CONTROL MEASURES:
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS, THE VDOT SPECIFICATIONS, VOLUME I OF THE VDOT ROAD AND BRIDGE STANDARDS, AND THE VA. EROSION AND SEDIMENT CONTROL HANDBOOK. THE MINIMUM STANDARDS SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.
1. SILT FENCE-VDOT STD EC-5: SILT FENCE SHALL BE USED WHERE INDICATED ON THE PLANS WHERE MINOR SHEET FLOW DRAINAGE WILL OCCUR FROM DISTURBED AREAS.
2. SEEDING-VDOT SPECIFICATION SECTION 603: SURFACE ROUGHENING AND TEMPORARY SEEDING WILL FOLLOW IMMEDIATELY AFTER GRADING. UPON FINAL PLACEMENT OF FILL AND TOPSOIL, SOIL STABILIZATION MATS WILL BE INSTALLED AND SLOPES SEEDED.

MANAGEMENT STRATEGIES:
1. SILT FENCES SHALL BE INSTALLED AS A FIRST STEP IN GRADING.
2. TEMPORARY SEEDING OR OTHER STABILIZATION SHALL FOLLOW IMMEDIATELY AFTER GRADING.
3. THE PROJECT CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
4. UPON COMPLETION OF THE PROJECT, TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WILL BE REMOVED ONLY AFTER DETERMINATION BY THE CITY OF ROANOKE THAT THE SITE HAS BEEN ADEQUATELY STABILIZED.

PERMANENT STABILIZATION:
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING FOLLOWING FINISHED GRADING. TOPSOIL, SEEDING, LIME, FERTILIZER AND MULCH SHALL BE PLACED ACCORDING TO VDOT SPECIFICATIONS SECTION 603.

MAINTENANCE:
IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:
1. SILT/FILTER BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
2. SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.
3. WHEN SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL "IMMEDIATELY" BE CLEANED. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THE MANNER.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

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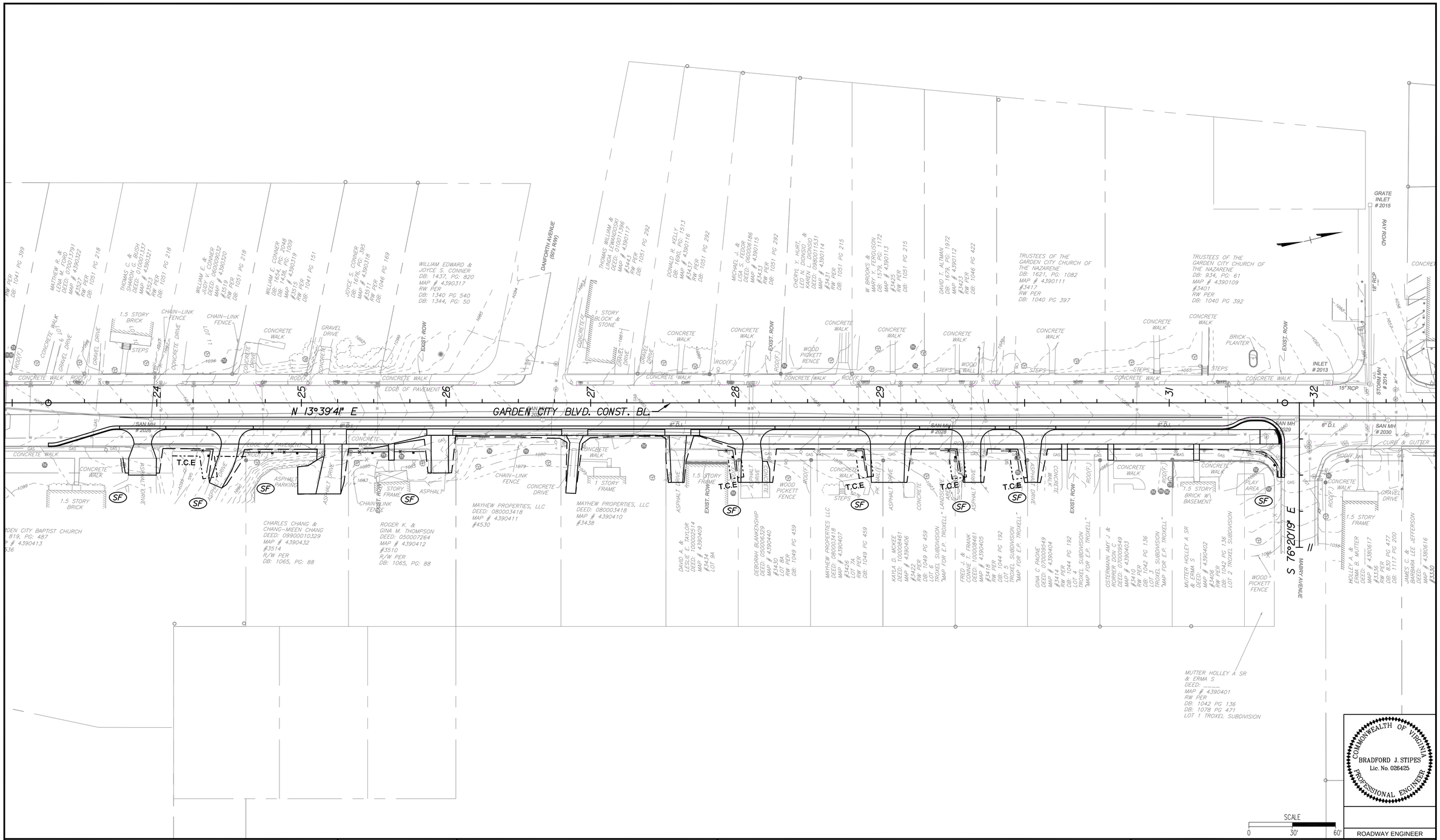
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

E & S CONTROL NARRATIVE AND E & S NOTES

		DATE	SHEET NUMBER
Designed:	D.B.D.	MAY 2014	C4
Drawn:	R.D.W.		
Checked:	R.D.P.		



COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

ROADWAY ENGINEER

SCALE
0 30' 60'

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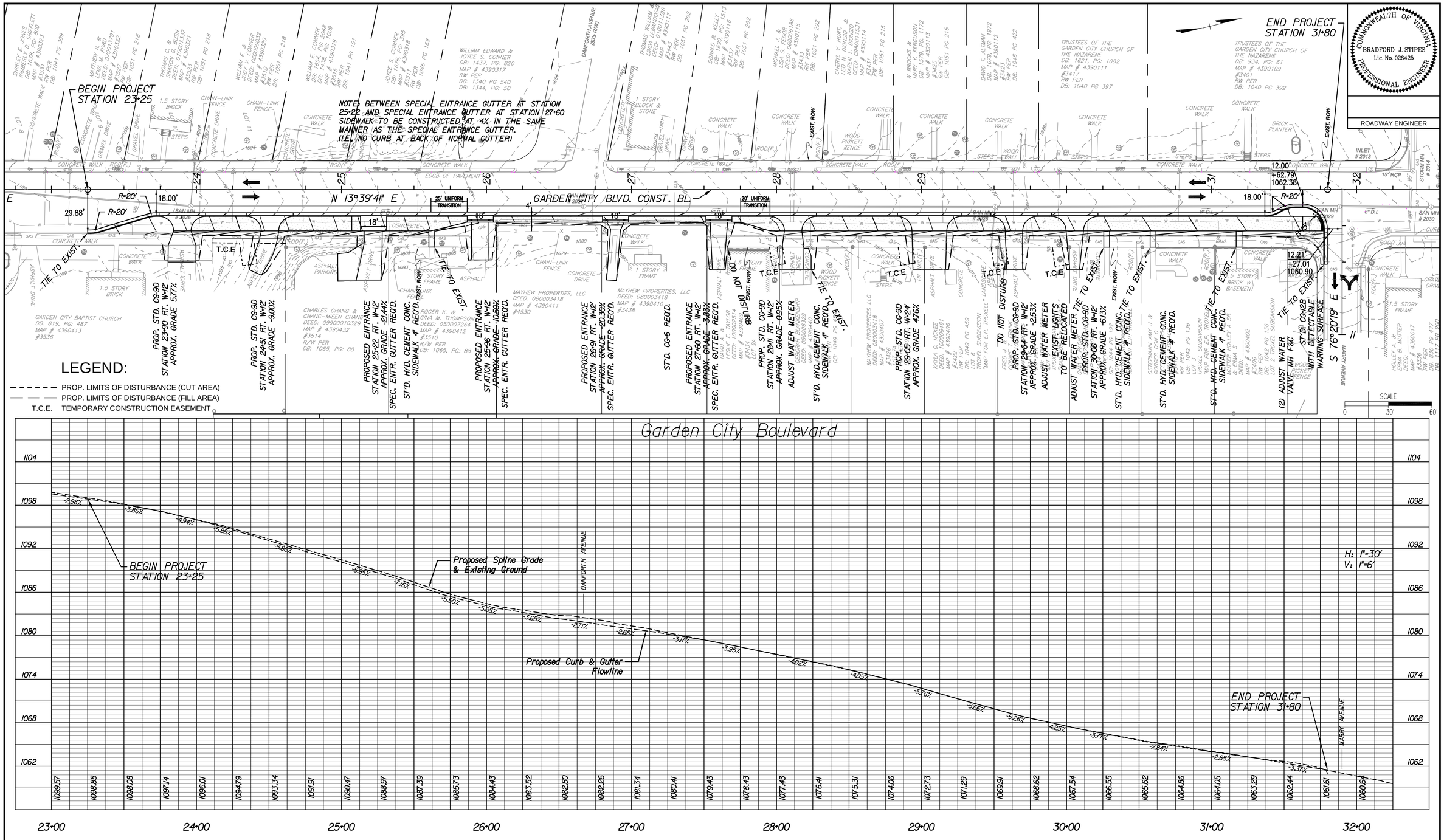
LEGEND

(SF) DENOTES SILT FENCE

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

E&SC PLAN VIEW

Designed:	D.B.D.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	C5
Checked:	R.D.P.		



LEGEND:

- PROP. LIMITS OF DISTURBANCE (CUT AREA)
- PROP. LIMITS OF DISTURBANCE (FILL AREA)
- T.C.E. TEMPORARY CONSTRUCTION EASEMENT

DENOTES PROPOSED PAVEMENT

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SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

PLAN & PROFILE VIEW

Designed: A.J.K./D.B.D	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C6
Checked: R.D.P.		

Driveway 23+90 Rt

STA = 10+33.50
EL = 1097.28
K = 2.66
L = 10.00

STA = 10+45.00
EL = 1097.94
K = 7.84
L = 10.00

+2.00%
+12.00%
-8.33%
5.77%
-7.04%
Proposed Grade
Existing Ground

1097.11
1098.30

Driveway 24+51 Rt

STA = 10+28.50
EL = 1093.80
K = 3.33
L = 10.00

STA = 10+38.50
EL = 1093.70
K = 1.25
L = 10.00

STA = 10+54.00
EL = 1092.30
K = 1.40
L = 10.00

+2.00%
+12.00%
-8.33%
1.00%
-9.00%
4.87%
Proposed Grade
Existing Ground

1093.73
1092.97

Driveway 25+22 Rt

STA = 10+28.50
EL = 1089.29
K = 1.82
L = 10.00

STA = 10+38.50
EL = 1089.14
K = 1.00
L = 10.00

STA = 10+48.50
EL = 1087.99
K = 1.01
L = 10.00

-1.50%
+4.00%
-8.33%
-11.50%
21.44%
Proposed Grade
Existing Ground

1089.14
1087.61

Driveway 25+96 Rt

STA = 10+27.50
EL = 1084.74
K = 2.17
L = 10.00

STA = 10+37.50
EL = 1084.68
K = 1.00
L = 10.00

-0.60%
+4.00%
-8.33%
-6.59%
Proposed Grade
Existing Ground

1084.62

Driveway 26+91 Rt

STA = 10+27.50
EL = 1081.60
K = 1.20
L = 10.00

STA = 10+37.50
EL = 1081.17
K = 1.00
L = 10.00

STA = 10+47.50
EL = 1079.74
K = 1.61
L = 10.00

STA = 10+57.50
EL = 1077.71
K = 0.94
L = 10.00

4.30%
+4.00%
-8.33%
14.30%
-20.30%
Proposed Grade
Existing Ground

1081.41
1079.21

Driveway 27+60 Rt

STA = 10+27.50
EL = 1079.44
K = 3.33
L = 10.00

STA = 10+38.50
EL = 1079.55
K = 2.07
L = 10.00

STA = 10+50.00
EL = 1079.11
K = 2.74
L = 10.00

+4.00%
-8.33%
1.00%
-3.83%
Proposed Grade
Existing Ground

1079.33
1079.15

Driveway 28+11 Rt

STA = 10+33.50
EL = 1077.74
K = 8.11
L = 10.00

STA = 10+50.00
EL = 1077.87
K = 55.09
L = 10.00

+2.00%
+12.00%
-8.33%
0.77%
-0.95%
Proposed Grade
Existing Ground

1077.57
1077.87

Driveway 29+05 Rt

STA = 10+33.50
EL = 1073.25
K = 3.62
L = 10.00

STA = 10+50.00
EL = 1074.04
K = 7.21
L = 10.00

+2.00%
+12.00%
-8.33%
4.76%
-6.15%
Proposed Grade
Existing Ground

1073.08
1074.05

Driveway 29+64 Rt

STA = 10+28.50
EL = 1069.88
K = 3.33
L = 10.00

STA = 10+38.50
EL = 1069.78
K = 6.53
L = 10.00

STA = 10+48.50
EL = 1069.53
K = 2.87
L = 10.00

+2.00%
+12.00%
-8.33%
1.00%
2.53%
-4.25%
Proposed Grade
Existing Ground

1069.81
1069.57

Driveway 30+06 Rt

STA = 10+28.50
EL = 1068.00
K = 3.33
L = 10.00

STA = 10+38.50
EL = 1067.90
K = 1.95
L = 10.00

STA = 10+48.50
EL = 1067.29
K = 1.62
L = 10.00

+2.00%
+12.00%
-8.33%
1.00%
-6.13%
-6.25%
Proposed Grade
Existing Ground

1067.93
1067.33

10+00
11+00

H: 1"=30'
V: 1"=6'

COMMONWEALTH OF VIRGINIA
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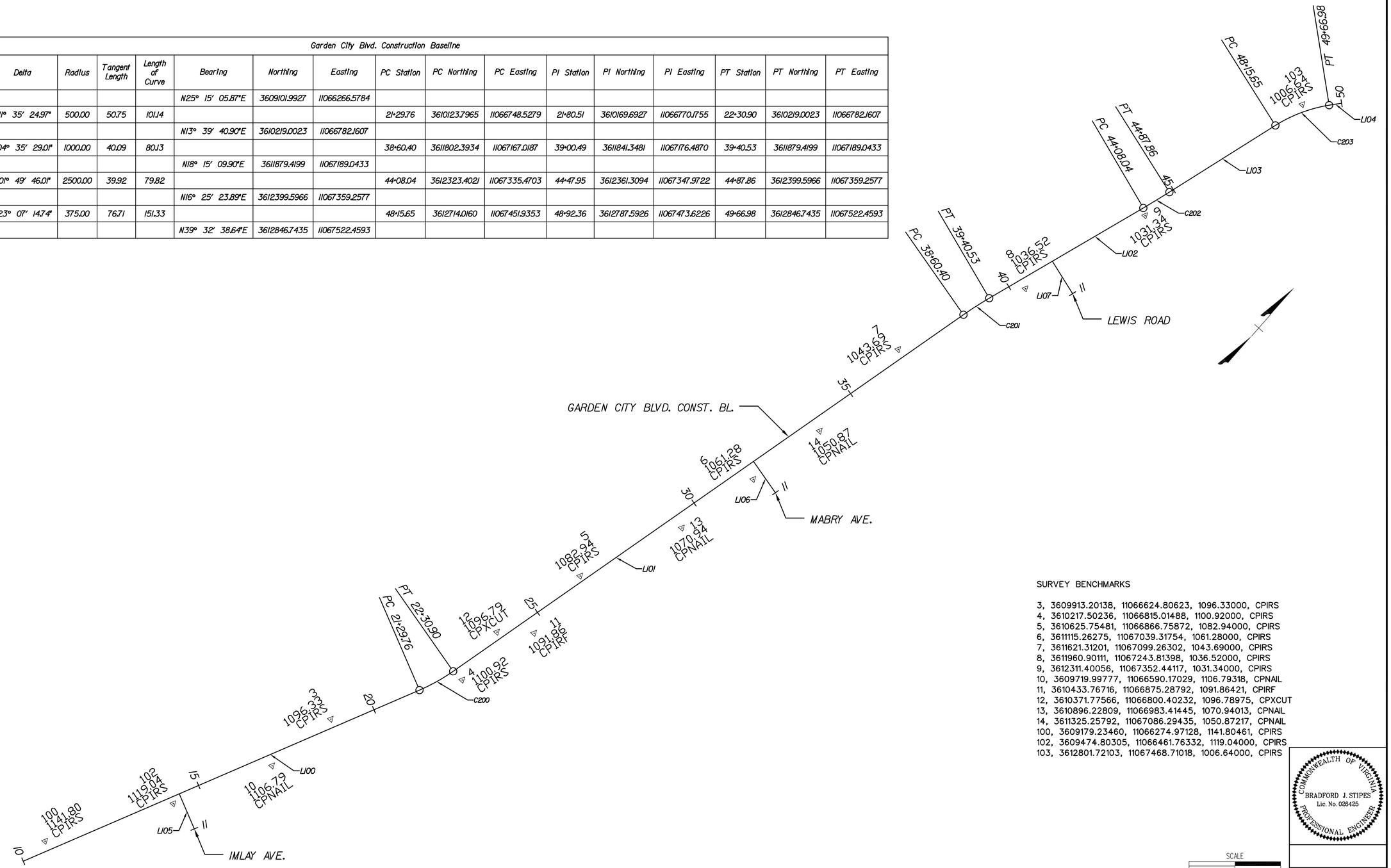
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

DRIVEWAY PROFILES

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C7
Checked: R.D.P.		

Garden City Blvd. Construction Baseline																	
Number	Starting Station	Delta	Radius	Tangent Length	Length of Curve	Bearing	Northing	Easting	PC Station	PC Northing	PC Easting	PI Station	PI Northing	PI Easting	PT Station	PT Northing	PT Easting
LI00	10+00.00					N25° 15' 05.87"E	3609101.9927	11066266.5784									
C200		011° 35' 24.97"	500.00	50.75	101.14				21+29.76	3610123.7965	11066748.5279	21+80.51	3610169.6927	11066770.1755	22+30.90	3610219.0023	11066782.1607
LI01	22+30.90					N13° 39' 40.90"E	3610219.0023	11066782.1607									
C201		004° 35' 29.01"	1000.00	40.09	80.13				38+60.40	3611802.3934	11067167.0187	39+00.49	3611841.3481	11067176.4870	39+40.53	3611879.4199	11067189.0433
LI02	39+40.53					N18° 15' 09.90"E	3611879.4199	11067189.0433									
C202		001° 49' 46.01"	2500.00	39.92	79.82				44+08.04	3612323.4021	11067335.4703	44+47.95	3612361.3094	11067347.9722	44+87.86	3612399.5966	11067359.2577
LI03	44+87.86					N16° 25' 23.89"E	3612399.5966	11067359.2577									
C203		023° 07' 14.74"	375.00	76.71	151.33				48+15.65	3612714.0160	11067451.9353	48+92.36	3612787.5926	11067473.6226	49+66.98	3612846.7435	11067522.4593
LI04	49+66.98					N39° 32' 38.64"E	3612846.7435	11067522.4593									



SURVEY BENCHMARKS

3, 3609913.20138, 11066624.80623, 1096.33000, CPIRS
4, 3610217.50236, 11066815.01488, 1100.92000, CPIRS
5, 3610625.75481, 11066866.75872, 1082.94000, CPIRS
6, 3611115.26275, 11067039.31754, 1061.28000, CPIRS
7, 3611621.31201, 11067099.26302, 1043.69000, CPIRS
8, 3611960.90111, 11067243.81398, 1036.52000, CPIRS
9, 3612311.40056, 11067352.44117, 1031.34000, CPIRS
10, 3609719.99777, 11066590.17029, 1106.79318, CPNAIL
11, 3610433.76716, 11066875.28792, 1091.86421, CPIRF
12, 3610371.77566, 11066800.40232, 1096.78975, CPXCUT
13, 3610896.22809, 11066983.41445, 1070.94013, CPNAIL
14, 3611325.25792, 11067086.29435, 1050.87217, CPNAIL
100, 3609179.23460, 11066274.97128, 1141.80461, CPIRS
102, 3609474.80305, 11066461.76332, 1119.04000, CPIRS
103, 3612801.72103, 11067468.71018, 1006.64000, CPIRS

COMMONWEALTH OF VIRGINIA
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SCALE
0 120' 240'

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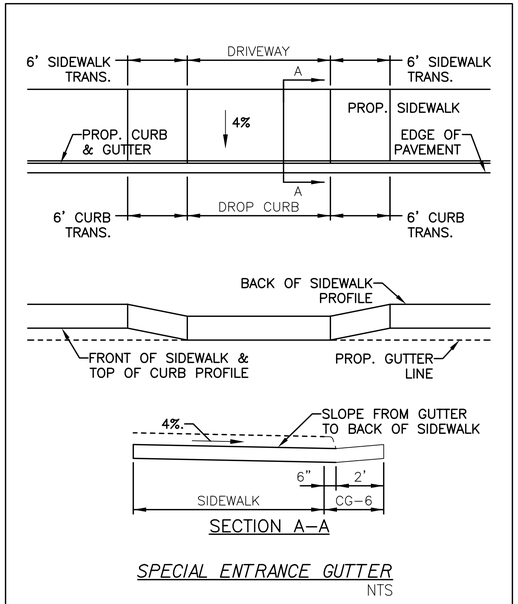
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

ALIGNMENT DATA

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	D1
Checked: R.D.P.		

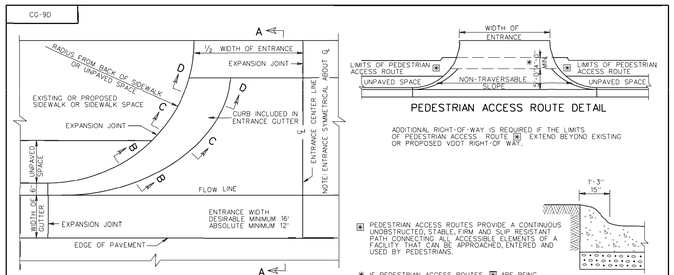


SECTION A–A

SPECIAL ENTRANCE GUTTER

NTS

CG-9D



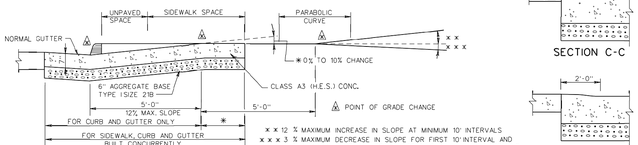
PEDESTRIAN ACCESS ROUTE DETAIL

ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE Ⓟ EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF WAY.

Ⓟ PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.

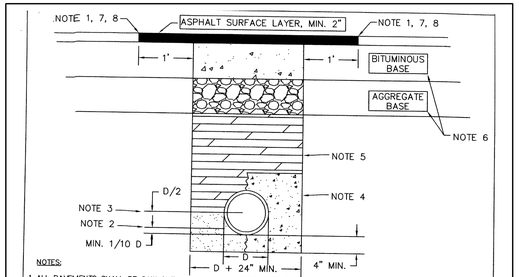
✱ IF PEDESTRIAN ACCESS ROUTES Ⓟ ARE BEING PROVIDED, A MINIMUM 4' TRAVERSABLE WIDTH IS REQUIRED WITH A MAX. 2% CROSS SLOPE.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.



SECTION A-A

VDOT ROAD AND BRIDGE STANDARDS		STANDARD ENTRANCE GUTTER	SPECIFICATION REFERENCE
SHEET 1 OF 1	REVISION DATE	VIRGINIA DEPARTMENT OF TRANSPORTATION	502
203.03	01/13		



NOTES:

1. ALL PAVEMENTS SHALL BE SAW CUT WITH NEAT, UNIFORM LINES PRIOR TO EXCAVATION.
2. PIPE BEDDING MATERIAL SHALL BE CRUSHER RUN (VDOT NO. 25 OR 26) OR OPEN GRADED AGGREGATE (VDOT NO. 57, 68, 7, OR 8). ALTERNATE MATERIAL MUST BE APPROVED BY THE CITY ENGINEER.
3. MAXIMUM DEPTH OF PIPE BEDDING MATERIAL IF USING OPEN GRADED AGGREGATE FOR BEDDING.
4. OPTIONAL CONCRETE ENCASEMENT FOR POWER OR COMMUNICATION CONDUIT. PROVIDE A MINIMUM OF 4" CONCRETE COVER FROM ALL SIDES OF CONDUIT.
5. BACKFILL MATERIAL SHALL BE VDOT NO. 21A AGGREGATE, PLACED IN LOOSE LIFTS NOT EXCEEDING 6", AND COMPACTED TO AT LEAST 95% MAXIMUM DRY DENSITY WITHIN 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE (VTM-1) WITH THE USE OF MECHANICAL TAMPERS OR VIBRATORY ROLLERS. WATER COMPACTION IS NOT PERMITTED. TYPE I SELECT MATERIAL MAY BE USED AS BACKFILL UPON PRIOR APPROVAL BY THE CITY ENGINEER. MATERIAL CLASSIFICATION SHALL BE PERFORMED ON THE ACTUAL SOIL TO VERIFY THAT SOIL MEETS VDOT SPECIFICATIONS FOR TYPE I SELECT MATERIAL BY A QUALIFIED TESTING LABORATORY AND TEST RESULTS SHALL BE CERTIFIED BY A VIRGINIA REGISTERED PROFESSIONAL ENGINEER. DENSITY REQUIREMENTS ARE THE SAME AS ABOVE, HOWEVER, MOISTURE CONTENT FOR SOILS MAY WITH WITHIN 20% OF OPTIMUM.

   ALL TESTING SHALL BE PERFORMED AND CERTIFIED BY A GEOTECHNICAL ENGINEER OR A VDOT-CERTIFIED TECHNICIAN. RESULTS SHALL BE PROVIDED TO THE INSPECTOR WITHIN 24 HOURS OF TESTING COMPLETION. THE COST OF ALL TESTING IS THE RESPONSIBILITY OF THE PERMITTEE. FIELD DENSITY TESTING METHODS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO PERFORMING ANY TESTING.
6. ALL PAVEMENTS SHALL BE RESTORED TO MATCH DEPTHS OF EXISTING SURFACE, BASE, AND AGGREGATE LAYERS. THE ASPHALT SURFACE LAYER SHALL BE A MINIMUM OF 2" THICK AND EXTEND OVER UNDISTURBED BASE A MINIMUM OF 12" ON ALL SIDES. ALL PAVEMENT MATERIALS SHALL MEET VDOT REQUIREMENTS FOR SURFACE MIX (SM-9.5A, SM-9.5AL, OR SM-12.5D), BASE MIX (BM-25), AND STONE AGGREGATE (21A OR 21B). PLANT CERTIFICATION FOR EACH MIX INCORPORATED INTO THE WORK SHALL BE PROVIDED TO THE INSPECTOR. WHEN MATCHING NON-STANDARD MATERIALS, THE INSPECTOR SHALL DETERMINE AN ACCEPTABLE MATERIAL.
7. THE REPAIR SHALL BE RECTANGULAR AND SAW CUT IN STRAIGHT, UNIFORM LINES THAT ARE ALIGNED WITH THE STREET CENTERLINE. WHEN EDGES OF PAVEMENT HAVE BEEN UNDERMINED, PAVEMENT SHALL BE REMOVED TO A NEAT LINE 12" BEYOND THE UNDERMINED AREA. THE FINISHED PATCH SURFACE SHALL BE WITHIN 1/4 INCH AT ANY POINT ACROSS THE PATCH AS IT RELATES TO THE SURROUNDING STREET SURFACE.
8. A FULL COVERAGE TACK COAT IS REQUIRED ON ALL SURFACES THAT WILL CONTACT THE NEW SURFACE LAYER.

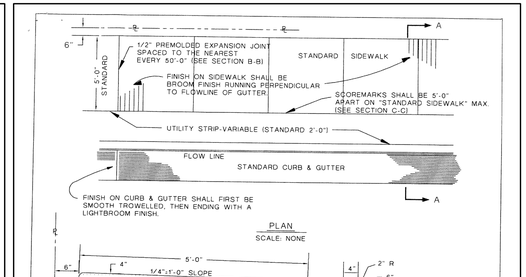
APPROVED: OFFICE OF THE CITY ENGINEER – ROANOKE, VIRGINIA

CITY ENGINEER

DATE: 12/01/04

UTILITY TRENCH REPAIR IN PAVEMENT USING VDOT NO. 21A AGGREGATE

3 OF 9



GENERAL NOTES:

1. All concrete shall be Class A 3000 p.s.i.
2. Spacing for Expansion Joints shall be the same for sidewalks as that for "Curb and Gutter."
3. Sidewalk Finish. Sidewalk shall be smooth trowelled, then ending with a "Light Broom Finish" unless otherwise noted.
4. When sidewalk abuts Curb or Building a 1/2" Premolded Expansion Joint is to be used.
5. Curing shall be accomplished by the use of a liquid membrane seal containing White Pigment, applied at the rate of one (1) gallon per 150 square feet.
6. All concrete "Curb and Gutter", and "Sidewalks" shall be constructed under the City of Roanoke's specifications and is to be in line and grade approved by the City Engineering Department.

NOTE: City of Roanoke 6" Curb and Gutter shall be used as Replacement of Existing Curb and Gutter where adjacent or existing 7" curb is present. All new Curb and Gutter shall be Standard CG-6 Virginia Department of Transportation Road and Bridge Standards.

APPROVED: OFFICE OF THE CITY ENGINEER - ROANOKE, VIRGINIA

CITY ENGINEER

DATE: 12/18/07

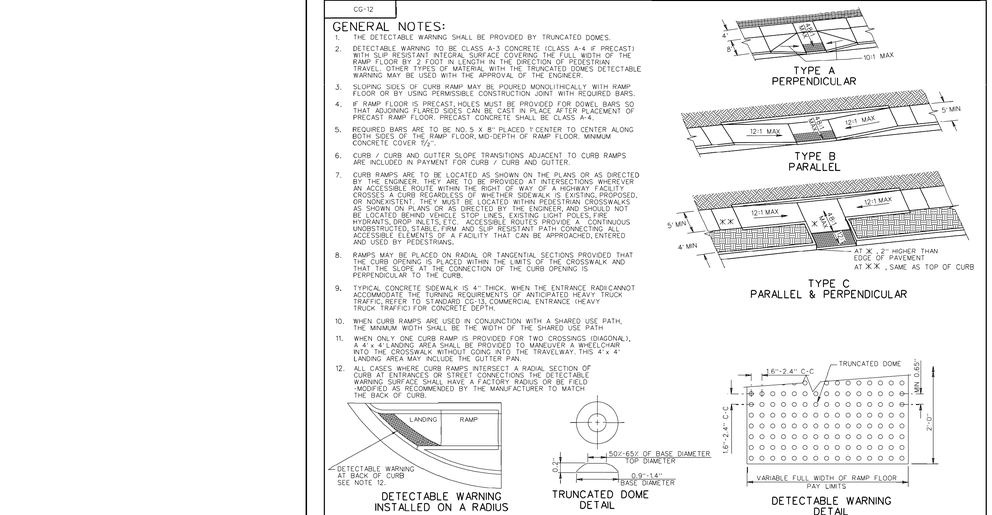
CITY OF ROANOKE CONCRETE SIDEWALK 6" CURB AND GUTTER NEW

SHEET 7 OF 9

CG-12

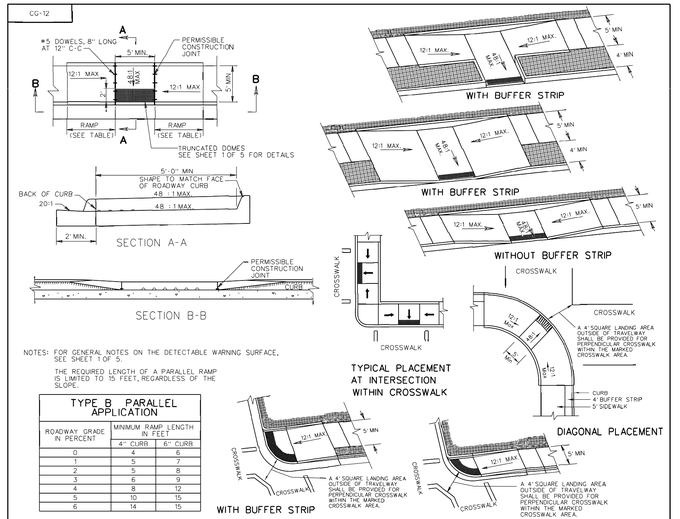
GENERAL NOTES:

1. THE DETECTABLE WARNING SHALL BE PROVIDED BY TRUNCATED DOMES.
2. DETECTABLE WARNING TO BE CLASS A-3 CONCRETE (CLASS A-4 IF PRECAST) WITH SLIP-RESISTANT INTEGRAL SURFACE COVERING THE FULL WIDTH OF THE RAMP FLOOR BY 2 FOOT IN LENGTH IN THE DIRECTION OF PEDESTRIAN TRAVEL. OTHER TYPES OF MATERIAL WITH THE TRUNCATED DOMES DETECTABLE WARNING MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
3. SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
4. IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.
5. REQUIRED BARS ARE TO BE NO. 5 X 8'- PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".
6. CURB / CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB / CURB AND GUTTER.
7. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.
8. RAMPS MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THAT THE SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
9. TYPICAL CONCRETE SIDEWALK IS 4" THICK. WHEN THE ENTRANCE RADII CANNOT ACCOMMODATE THE TURNING REQUIREMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC, REFER TO STANDARD CG-13, COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC) FOR CONCRETE DEPTH.
10. WHEN CURB RAMPS ARE USED IN CONJUNCTION WITH A SHARED USE PATH, THE MINIMUM WIDTH SHALL BE THE WIDTH OF THE SHARED USE PATH.
11. WHEN ONLY ONE CURB RAMP IS PROVIDED FOR TWO CROSSINGS (DIAGONAL), A 4' x 4' LANDING AREA SHALL BE PROVIDED TO MANEUVER A WHEELCHAIR INTO THE CROSSWALK WITHOUT GOING INTO THE TRAVELWAY. THIS 4' x 4' LANDING AREA MAY INCLUDE THE GUTTER PAN.
12. ALL CASES WHERE CURB RAMPS INTERSECT A RADIAL SECTION OF CURB & ENTRANCE OR STREET CONNECTIONS, THE DETECTABLE WARNING SURFACE SHALL HAVE A FACTORY RADIUS OR BE FIELD "MORPHED" AS RECOMMENDED BY THE MANUFACTURER TO MATCH THE BACK OF CURB.



VDOT ROAD AND BRIDGE STANDARDS		CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES)	SPECIFICATION REFERENCE
SHEET 1 OF 5	REVISION DATE	VIRGINIA DEPARTMENT OF TRANSPORTATION	105 502
203.05	7/11		

CG-12



NOTES: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

TYPE B PARALLEL APPLICATION

ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	6
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15

VDOT ROAD AND BRIDGE STANDARDS		CG-12 DETECTABLE WARNING SURFACE TYPE B (PARALLEL) APPLICATION	SPECIFICATION REFERENCE
SHEET 3 OF 5	REVISION DATE	VIRGINIA DEPARTMENT OF TRANSPORTATION	105 502
203.07	7/11		

ROANOKE

OFFICE OF THE CITY ENGINEER
215 CHURCH AVENUE, SW
ROOM 350
ROANOKE, VIRGINIA 24011-1587
PHONE: (540) 853-2731
FAX: (540) 853-1364
ENGINEER@ROANOKEVA.GOV

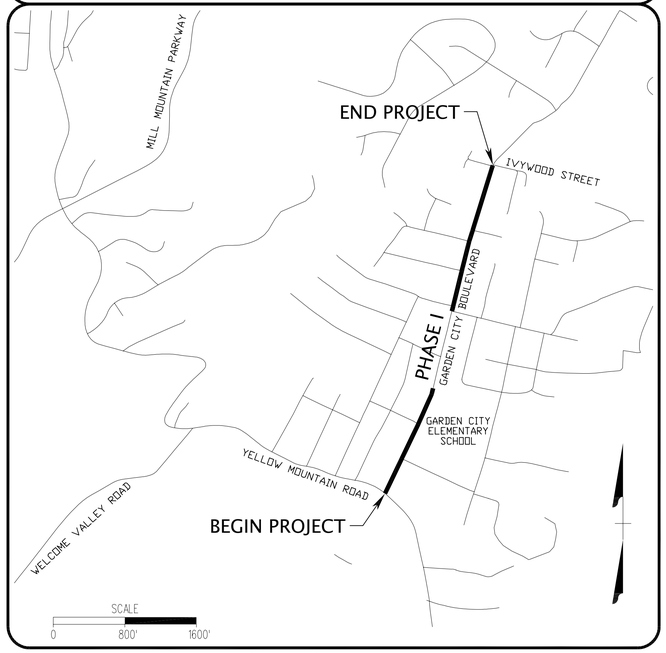
WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

DETAILS

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	D2
Checked:	R.D.P.		

PROJECT LOCATION MAP



ROANOKE

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ENGINEER@ROANOKEVA.GOV

INDEX OF SHEETS

NOTICE: ALL LANDOWNERS, DEVELOPERS AND CONTRACTORS

FAILURE TO COMPLY WITH THE CONSTRUCTION PROCEDURE REQUIREMENTS LISTED BELOW MAY RESULT IN THE COSTLY REMOVAL OF STRUCTURES, TIME DELAYS OR THE ISSUANCE OF A STOP WORK ORDER.

CONSTRUCTION PROCEDURE REQUIREMENTS

1. RIGHT-OF-WAY EXCAVATION PERMIT - PRIOR TO THE COMMENCEMENT OF ANY DIGGING, ALTERATION OR CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY (STREETS, ALLEYS, PUBLIC EASEMENTS), A RIGHT-OF-WAY EXCAVATION PERMIT SHALL BE APPLIED FOR AND OBTAINED BY THE CONTRACTOR FROM THE CITY OF ROANOKE.
2. LAND DISTURBANCE PERMIT - AN APPROVED EROSION AND SEDIMENT CONTROL PLAN FOR ANY BORROW/FILL SITES ASSOCIATED WITH THE PROJECT MUST BE SUBMITTED PRIOR TO THE ISSUANCE OF A LAND DISTURBANCE PERMIT.
3. PLANS AND PERMITS - A COPY OF THE PLANS AS APPROVED BY THE CITY (SIGNED BY THE PROPER CITY OFFICIALS) AND ALL PERMITS ISSUED BY THE CITY SHALL BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES OF ONGOING CONSTRUCTION.
4. LOCATION OF UTILITIES - THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
5. CONSTRUCTION ENTRANCE - THE CONTRACTOR SHALL INSTALL AN ADEQUATE CONSTRUCTION ENTRANCE FOR ALL CONSTRUCTION RELATED EGRESS FROM THE SITE. SIZE AND COMPOSITION OF CONSTRUCTION ENTRANCE SHALL BE AS SHOWN ON THE PLANS.
6. STREETS TO REMAIN CLEAN - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT THE PUBLIC STREET ADJACENT TO THE CONSTRUCTION ENTRANCE REMAINS FREE OF MUD, DIRT, DUST, AND/OR ANY TYPE OF CONSTRUCTION MATERIALS OR LITTER AT ALL TIMES.
7. BARRICADES/DITCHES - THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXCAVATED DITCHES AND SHALL FURNISH AND ENSURE THAT ALL BARRICADES PROPER AND NECESSARY FOR THE SAFETY OF THE PUBLIC ARE IN PLACE.
8. WATER, SEWER AND PAVEMENT REPLACEMENT - CONSTRUCTION OF POTABLE WATER, SANITARY SEWER AND THE REPLACEMENT OF PAVEMENT SHALL BE IN ACCORDANCE WITH APPROVED STANDARDS AND SPECIFICATIONS OF THE WESTERN VIRGINIA WATER AUTHORITY AND THE CITY OF ROANOKE.
9. APPROVED PLANS/CONSTRUCTION CHANGES - ANY CHANGE OR VARIATION FROM CONSTRUCTION DESIGN AS SHOWN ON THE OFFICIALLY APPROVED PLANS SHALL BE APPROVED BY THE EROSION AND SEDIMENT CONTROL AGENT PRIOR TO SAID CHANGES OR VARIATION IN CONSTRUCTION BEING MADE.
10. FINAL ACCEPTANCE/CITY - THE OWNER OR DEVELOPER SHALL FURNISH THE CITY OF ROANOKE'S PLANNING BUILDING AND DEVELOPMENT DEPARTMENT WITH A FIELD SURVEYED FINAL CORRECT SET OF AS-BUILT PLANS OF THE NEWLY CONSTRUCTED STORM DRAIN AND/OR STORMWATER MANAGEMENT FACILITIES PRIOR TO FINAL ACCEPTANCE AND ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE CITY. AS-BUILT PLANS SHALL BE PROVIDED IN THE STATE PLANE VIRGINIA SOUTH COORDINATE SYSTEM, NAD 1983, FIPS 4502 FEET, US SURVEY FEET, DATUM NA 83, IN THE FORM OF 1 PAPER COPY AND 1 DIGITAL AUTOCAD FILE.
11. CONTRACTOR SHALL CALL MISS UTILITY AT 811 AND PROVIDE THE REQUIRED INFORMATION PRIOR TO EXCAVATION AND IN ACCORDANCE WITH THE UTILITY DAMAGE PREVENTION ACT.
12. CONTRACTOR SHALL NOTIFY ROANOKE GAS 48 HOURS IN ADVANCE OF WORKING NEAR GAS LINES AND MAKING ADJUSTMENTS TO GAS APPURTENANCES. CONTACT LARRY NICHOLS AT 540-793-4496.
13. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.

WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

UTILITY CONTACT NUMBERS:

APPALACHIAN POWER COMPANY
40 FRANKLIN ROAD, SW
ROANOKE, VA 24100
800-956-4237

COX BUSINESS
5400 FALLOWWATER LANE, SW
ROANOKE, VA 24018
540-777-4753

WESTERN VIRGINIA WATER AUTHORITY
601 S. JEFFERSON STREET, SUITE 200
ROANOKE, VA 24011
540-853-5700

ROANOKE GAS COMPANY
519 KIMBALL AVENUE
ROANOKE, VA 24015
540-777-4427

APPROXIMATE DISTURBED PROJECT AREA = 0.39 AC = 16880 SF
APPROXIMATE NET PROJECT IMPERVIOUS AREA REDUCTION = 0.08 AC = 3480 SF

ON-STREET PARKING SPACES PROVIDED = 40

PROJECT NAME

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

TAX MAP 9999998

PLAN NUMBER: 6764

VDOT PROJECT NUMBER: U000-128-R58, P101, M501

VDOT UPC: 105745

CITY PLANNING NUMBER: CP140018

FEDERAL PROJECT NUMBER: N/A

REVISION BY	DESCRIPTION:	DATE

APPROVED FOR CONSTRUCTION

PARKS AND GREENWAYS PLANNER	DATE
DIRECTOR OF PARKS AND RECREATION	DATE
ASSISTANT CITY MANAGER OF COMMUNITY DEVELOPMENT	DATE

SHEET NUMBER: CS

LEGEND:

- EXIST. TELEPHONE PEDESTAL
- EXIST. FIRE HYDRANT
- EXIST. GAS VALVE
- EXIST. TREE DECIDIOUS
- EXIST. ELECTRIC BOX
- EXIST. GUY WIRE
- EXIST. LIGHT POLE
- EXIST. MONITORING WELL
- EXIST. POWER POLE
- EXIST. BOLLARD
- EXIST. HANDICAP PARKING SPACE
- EXIST. MAILBOX
- EXIST. SIGN
- EXIST. SATELLITE DISH
- EXIST. SHRUB
- EXIST. SEWER CLEANOUT
- EXIST. SEWER MANHOLE
- EXIST. TREE CONIFER
- EXIST. STORM MANHOLE
- EXIST. PAPER BOX
- EXIST. WATER METER
- EXIST. WATER MANHOLE
- SS — EXIST. SANITARY SEWER LINE
- GAS — EXIST. GAS LINE
- EXIST. STORM DRAIN
- W — EXIST. WATER LINE
- x — EXIST. FENCE
- 1100 — EXIST. CONTOUR
- EXIST. PROPERTY LINE

EXIST. SAN. SEWER STRUCTURE TABLE

(A.D.) = APPROXIMATE PIPE DIRECTION SHOWN HEREON.

(C.O.) = CLEANOUT

SAN MH # 2021
TOP= 1124.30'
INV IN (S)= 1114.00' (8" D.I. TO APPROX. PAVED OVER MH)
INV OUT (N)= 1113.92' (8" D.I. TO # 2022)

SAN MH # 2022
TOP= 1119.07'
INV IN (S)= 1107.12' (8" D.I. TO # 2021)
INV OUT (N)= 1106.89' (8" D.I. TO # 2023)

SAN MH # 2023
TOP= 1109.02'
INV IN (S)= 1097.83' (8" D.I. TO # 2022)
INV IN (E)= 1099.12' (A.D. 8" D.I.)
INV OUT (N)= 1097.77' (8" D.I. TO # 2024)

SAN MH # 2024
TOP= 1098.66'
INV IN (S)= 1088.00' (8" D.I. TO # 2023)
INV IN (E)= 1088.51' (A.D. 6" D.I.)
INV OUT (N)= 1087.92' (8" D.I. TO # 2025)

SAN MH # 2025
TOP= 1099.05'
INV IN (S)= 1086.55' (8" D.I. TO # 2024)
INV OUT (N)= 1086.42' (8" D.I. TO # 2026)

SAN MH # 2026
TOP= 1096.59'
INV IN (S)= 1084.97' (8" D.I. TO # 2025)
INV IN (W)= 1086.45' (4" D.I. TO # C.O.)
INV OUT (N)= 1084.93' (8" D.I. TO # 2027)

SAN MH # 2027
TOP= 1082.31'
INV IN (S)= 1070.58' (8" D.I. TO # 2026)
INV OUT (N)= 1070.41' (8" D.I. TO # 2028)

SAN MH # 2028
TOP= 1070.12'
INV IN (S)= 1060.60' (8" D.I. TO # 2027)
INV IN (E)= 1061.04' (6" PVC TO C.O.)
INV OUT (N)= 1060.51' (8" D.I. TO # 2029)

SAN MH # 2029
TOP= 1061.50'
INV IN (S)= 1048.70' (8" D.I. TO # 2028)
INV OUT (N)= 1048.61' (8" D.I. TO # 2030)

SAN MH # 2030
TOP= 1058.92'
INV IN (S)= 1047.18' (8" D.I. TO # 2029)
INV OUT (N)= 1047.12' (8" D.I. TO # 2041)

SAN MH # 2041
TOP= 1046.07'
INV IN (S)= 1035.22' (8" D.I. TO # 2030)
INV OUT (N)= 1035.14' (8" D.I. TO # 2042)

SAN MH # 2042
TOP= 1043.58'
INV IN (S)= 1031.36' (8" D.I. TO # 2041)
INV OUT (N)= 1031.29' (8" D.I. TO # 2043)

SAN MH # 2043
TOP= 1037.98'
INV IN (S)= 1026.10' (8" D.I. TO # 2042)
INV OUT (N)= 1026.04' (8" D.I. TO # 2044)

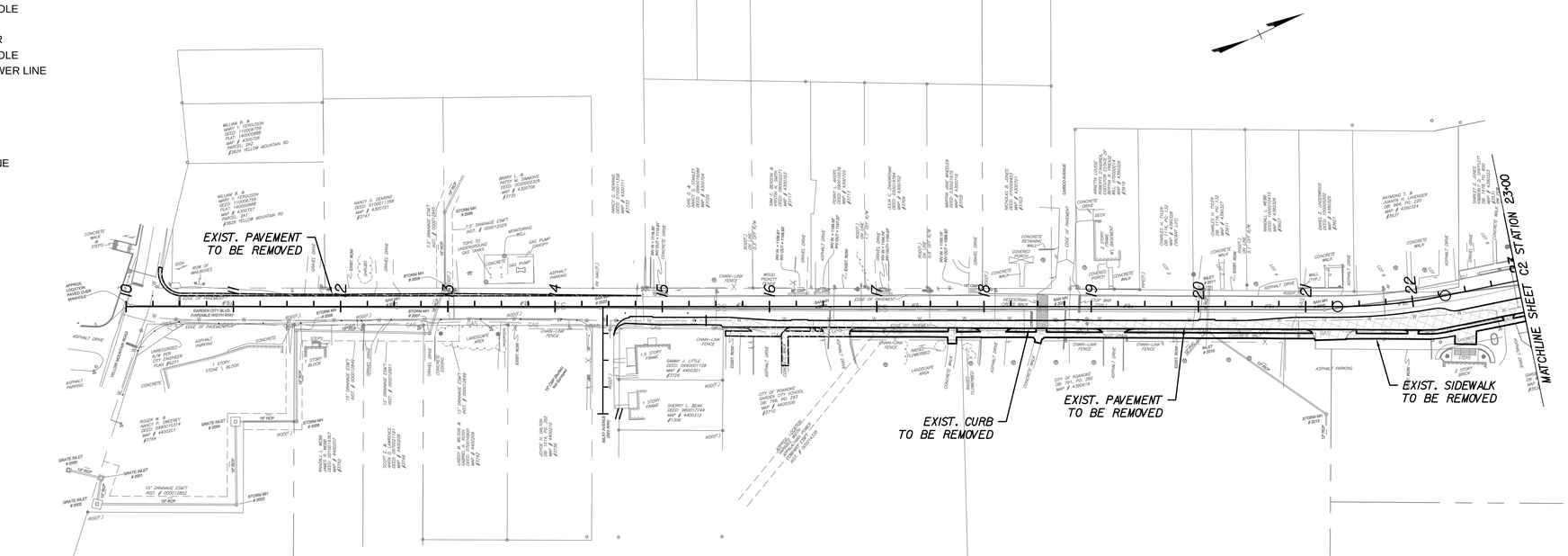
SAN MH # 2044
TOP= 1034.14'
INV IN (S)= 1023.09' (8" D.I. TO # 2043)
INV IN (NW)= 1029.74' (6" PVC TO C.O.)
INV OUT (N)= 1023.06' (8" D.I. TO # 2045)

SAN MH # 2045
TOP= 1026.99'
INV IN (S)= UNOBTAINABLE
INV OUT (N)= UNOBTAINABLE
(PAVED OVER, UNABLE TO OPEN MANHOLE)

SAN MH # 2046
TOP= 1006.87'
INV IN (S)= 998.71' (8" D.I. TO # 2045)
INV IN (W)= 998.77' (8" D.I. TO # 2047)
INV OUT (N)= 998.57' (8" D.I. TO # 2048)

SAN MH # 2047
TOP= 1030.72'
INV IN (W)= 1026.97' (A.D. 4" D.I.)
INV IN (NW)= 1026.52' (A.D. 4" PVC)
INV IN (SW)= 1026.44' (A.D. 6" PVC)
INV OUT (E)= 1020.44' (8" D.I. TO # 2046)

SAN MH # 2048
TOP= 984.03'
INV IN (S)= 973.14' (8" D.I. TO # 2046)
INV IN (SE)= 973.11' (A.D. 8" D.I.)
INV OUT (N)= 973.07' (A.D. 10" D.I. TO OFFSITE)



EXIST. STORM STRUCTURE TABLE

(A.D.) = APPROXIMATE PIPE DIRECTION SHOWN HEREON.

GRATE INLET # 2000
TOP= 1135.19'
INV OUT (N)= 1132.36' (15" RCP TO # 2001)

GRATE INLET # 2001
TOP= 1134.88'
INV IN (S)= 1131.37' (15" RCP TO # 2000)
INV OUT (E)= 1131.20' (15" RCP TO # 2002)

GRATE INLET # 2002
TOP= 1135.17'
INV IN (W)= 1130.63' (15" RCP TO # 2001)
INV OUT (N)= 1130.54' (15" RCP TO # 2003)

STORM MH # 2003
TOP= 1131.97'
INV IN (S)= 1127.85' (15" RCP TO # 2002)
INV OUT (W)= 1127.74' (15" RCP TO # 2004)

GRATE INLET # 2004
TOP= 1130.14'
INV IN (E)= 1126.68' (15" RCP TO # 2003)
INV OUT (N)= 1126.54' (15" RCP TO # 2005)

STORM MH # 2005
TOP= 1130.17'
INV IN (S)= 1125.06' (15" RCP TO # 2004)
INV OUT (W)= 1124.99' (15" RCP TO # 2006)

STORM MH # 2006
TOP= 1130.66'
INV IN (E)= 1122.79' (15" RCP TO # 2005)
INV OUT (N)= 1122.70' (15" RCP TO # 2007)

STORM MH # 2007
TOP= 1122.74'
INV IN (S)= 1118.47' (15" RCP TO # 2006)
INV OUT (W)= 1115.57' (15" RCP TO # 2008)

STORM MH # 2008
TOP= 1121.34'
INV IN (E)= 1114.81' (15" RCP TO # 2007)
INV OUT (W)= 1114.74' (15" RCP TO # 2009)

STORM MH # 2009
TOP= 1120.41'
INV IN (E)= 1112.16' (15" RCP TO # 2008)
INV OUT (W)= 1112.08' (A.D. 15" RCP TO OFFSITE)

INLET # 2010
TOP= 1096.90'
INV OUT (NE)= 1093.60' (12" RCP TO # 2012)
INV IN (SE)= 1094.15' (A.D. 12" PVC)
INV IN (W)= 1093.65' (15" RCP TO # 2011)

INLET # 2011
TOP= 1096.52'
INV OUT (E)= 1094.17' (15" RCP TO # 2010)

STORM MH # 2012
TOP= 1097.73'
INV IN (SW)= 1092.17' (12" RCP TO # 2010)
INV OUT (E)= 1091.85' (A.D. 12" RCP TO OFFSITE)

INLET # 2013
TOP= 1060.20'
INV OUT (N)= 1056.76' (15" RCP TO # 2014)

STORM MH # 2014
TOP= 1058.55'
INV IN (SW)= 1056.28' (15" RCP TO # 2013)
INV OUT (W)= 1055.22' (18" RCP TO # 2015)

GRATE INLET # 2015
TOP= 1055.77'
INV IN (E)= 1052.77' (18" RCP TO # 2014)
INV OUT (W)= 1052.62' (A.D. TO OFFSITE)

INLET # 2016
TOP= 1034.36'
INV OUT (N)= 1028.43' (18" RCP TO # 2017)

STORM MH # 2017
TOP= 1032.54'
INV IN (S)= 1028.03' (18" RCP TO # 2016)
INV OUT (N)= 1027.94' (18" RCP TO # 2019)

GRATE INLET # 2018
TOP= 1030.25'
INV OUT (N)= 1027.00' (18" RCP TO OUTFALL)
INV IN (E)= 1027.27' (A.D. 8" PVC)
INV IN (SE)= 1026.97' (A.D. 4" PVC)

INLET # 2019
TOP= 1032.23'
INV IN (S)= 1027.85' (18" RCP TO # 2017)
INV IN (W)= 1027.68' (18" CMP TO # 2020)
INV OUT (E)= 1027.58' (18" CMP TO OUTFALL)

INLET # 2020
TOP= 1033.04'
INV OUT (E)= 1029.76' (18" CMP TO # 2019)

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

SCALE
0 60' 120'

ROADWAY ENGINEER

ROANOKE

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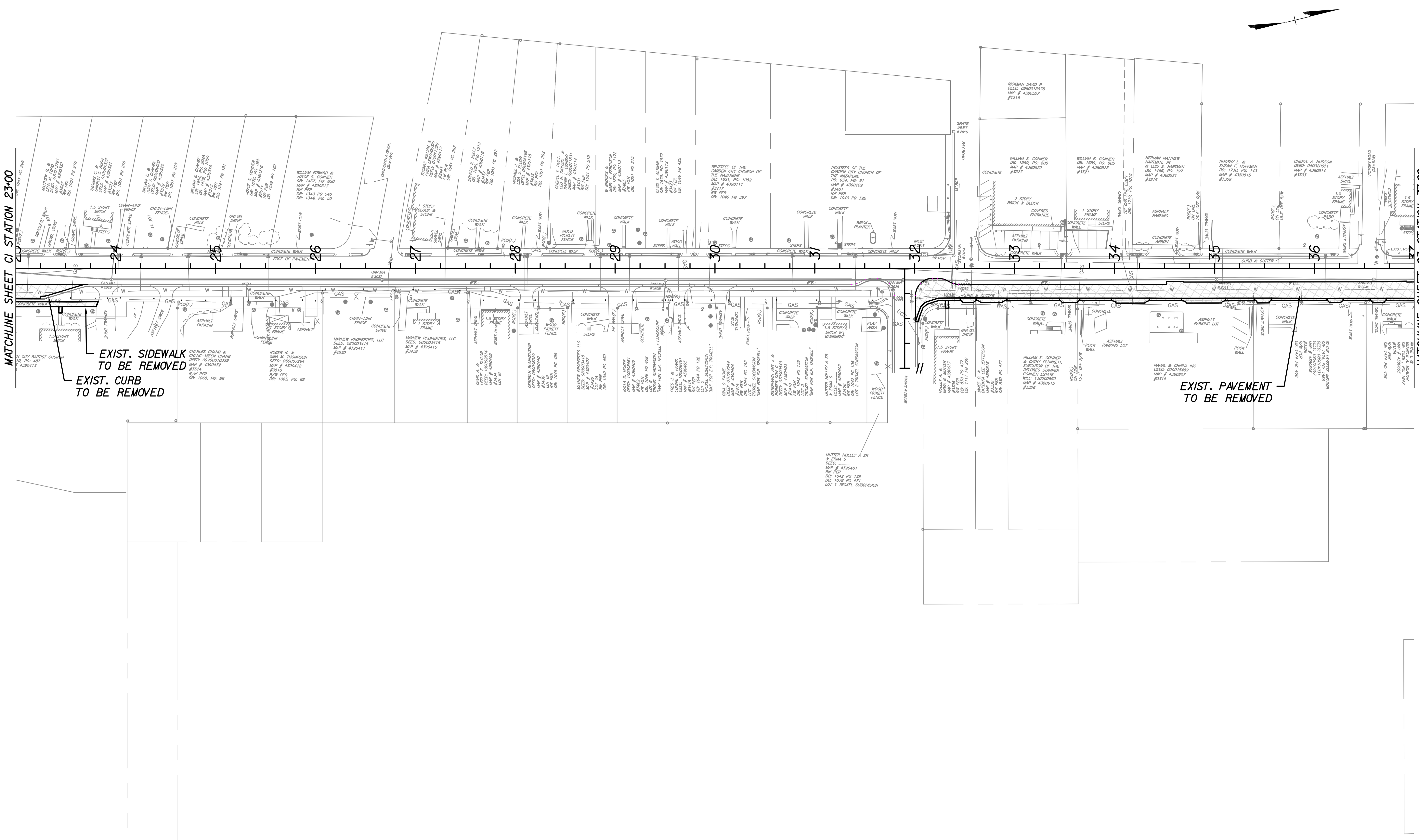
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

DENOTES PROPOSED DEMOLITION

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

EXISTING CONDITIONS / DEMOLITION PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C1
Checked: R.D.P.		



COMMONWEALTH OF VIRGINIA
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DENOTES PROPOSED DEMOLITION

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

EXISTING CONDITIONS / DEMOLITION PLAN

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	C2
Checked:	R.D.P.		

SCALE
0 60' 120'

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 028425
PROFESSIONAL ENGINEER

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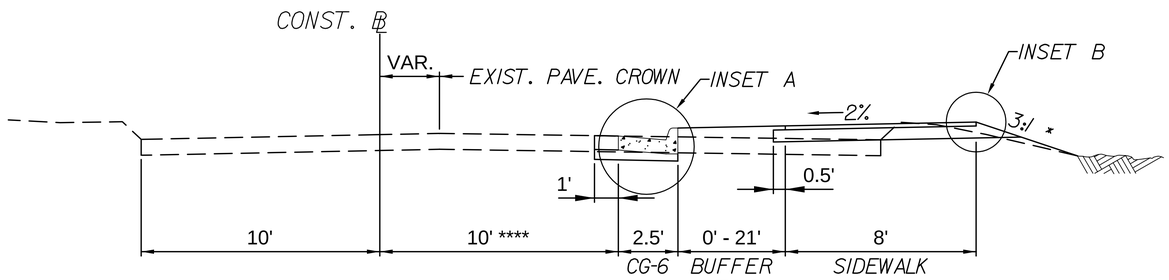
DENOTES PROPOSED DEMOLITION

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

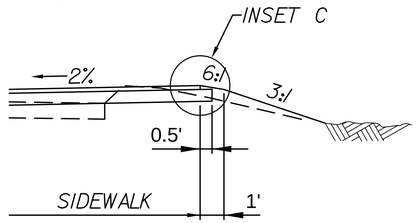
EXISTING CONDITIONS / DEMOLITION PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C3
Checked: R.D.P.		

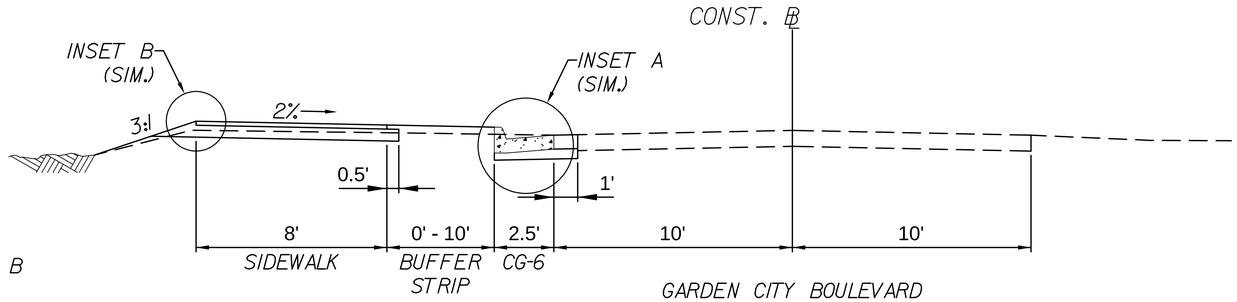
NOTE: SEE PLANS FOR BUFFER STRIP DIMENSIONS.



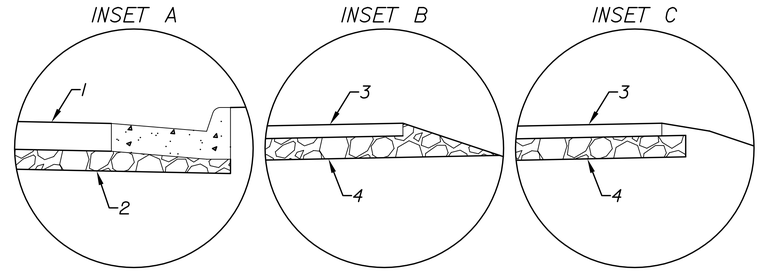
GARDEN CITY BOULEVARD
(STATIONS 14+54.91 TO 22+19.44, 32+00 TO 32+22.77, 39+00.71 TO 48+91.34)
* SLOPE SHALL BE 2:1 AT STATIONS 41+40.20 TO 48+91.34 RT.
**** 13' LANE AT STATIONS 15+81.97 TO 20+45.00 RT.
N.T.S.



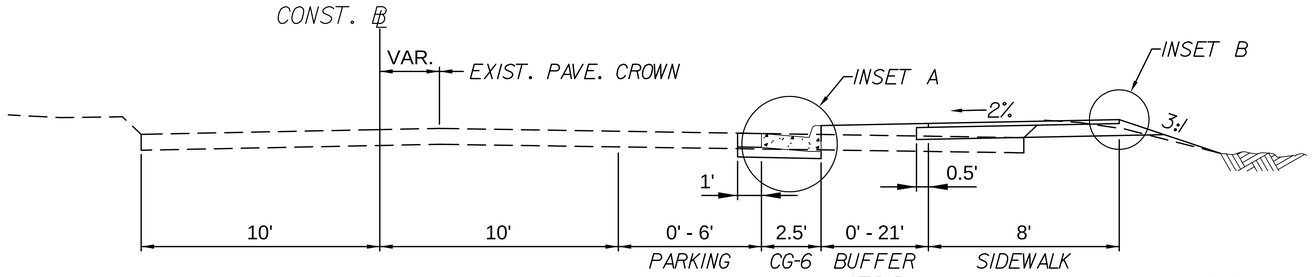
(STATIONS 15+56.84 TO 22+19.44
& 32+00 TO 32+22.77)



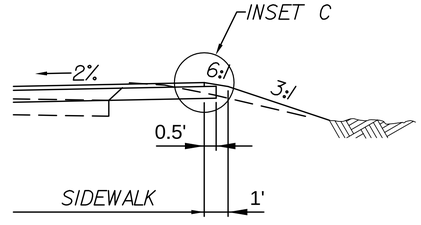
GARDEN CITY BOULEVARD
(STATIONS 10+30.08 TO 14+84.58)
N.T.S.



1 7" ASPHALT CONCRETE TY. BM-25A
2 8" AGGR. BASE MAT'L. TY-I NO. 21-A OR B
3 2" ASPHALT CONCRETE TY. SM-9.5A
4 6" AGGR. BASE MAT'L. TY-I NO. 21-A OR B



GARDEN CITY BOULEVARD (ON STREET PARKING)
(STATIONS 22+19.44 TO 23+75 & 32+22.77 TO 39+00.71)
N.T.S.

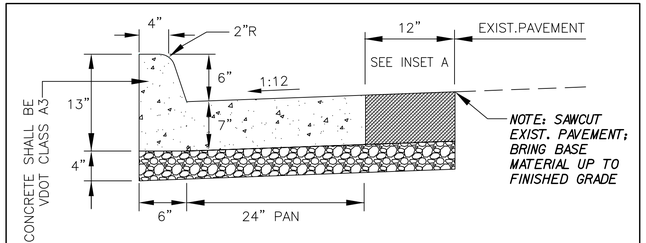


(STATIONS 22+19.44 TO 23+75, 32+22.77 TO 32+60.59
& 35+39.18 TO 38+79.31)

DRIVEWAYS

Gravel	Concrete	Asphalt
6" Crusher Run Aggr. 25 or 26	Concrete Entrance Pavement 7" HES 4" Aggr. Base Mat'l. Ty-I No. 21-A or B	2" Asphalt Concrete Ty. SM-9.5A 4" Aggr. Base Mat'l. Ty-I No. 21-A or B

The type of entrance to be constructed will be determined by the existing condition at the time of construction.



STANDARD 6" CURB AND GUTTER (CG-6)
WITH ASPHALT RESTORATION NTS

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

TYPICAL SECTIONS

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C4
Checked: R.D.P.		

9VAC25-840-40. Minimum Standards.

This Erosion and Sediment Control Plan complies with the following criteria, techniques and methods (as adopted by the City of Roanoke) as described below:

MS-1. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Response: Contractor shall comply. See Erosion and Sediment Control Measures, Sheet C5b.

MS-2. During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.

Response: The contractor shall protect/stabilize all soil stockpiles and borrow areas with proper sediment control measures including temporary silt barriers and temporary soil stabilization. These measures shall apply to all stockpile or borrow areas on or off site.

MS-3. A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.

Response: Contractor shall comply. See Erosion and Sediment Control Measures, and Maintenance, Sheet C5b.

MS-4. Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.

Response: Not applicable to this project.

MS-5. Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.

Response: Not applicable to this project.

MS-6. Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.

Response: Not applicable to this project.

b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.

Response: Not applicable to this project.

MS-7. Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.

Response: Contractor shall comply. See Maintenance, Sheet C5b.

MS-8. Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.

Response: Not applicable to this project.

MS-9. Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.

Response: Not applicable to this project.

MS-10. All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.

Response: Contractor shall comply. See Erosion and Sediment Control Measures, Sheet C5b.

MS-11. Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.

Response: Contractor shall comply. See Erosion and Sediment Control Measures, Sheet C5b.

MS-12. When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.

Response: Not applicable to this project.

MS-13. When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.

Response: Not applicable to this project.

MS-14. All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met.

Response: Not applicable to this project.

MS-15. The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.

Response: Not applicable to this project.

MS-16. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

a. No more than 500 linear feet of trench may be opened at one time.

Response: Contractor shall comply.

b. Excavated material shall be placed on the uphill side of trenches.

Response: Contractor shall comply when applicable, however, excavated material not needed for backfill shall be hauled away.

c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.

Response: Contractor shall comply.

d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.

Response: Contractor shall comply. Trench backfill material shall be compacted in accordance with VDOT Specifications Section 302 and 303.

e. Restabilization shall be accomplished in accordance with these regulations.

Response: Contractor shall comply. Restabilization shall be in accordance with VDOT Specifications Section 303 and 603.

f. Applicable safety chapters shall be complied with.

Response: Contractor shall comply with all safety regulations as noted in current VDOT Road & Bridge Specifications Section 107.17.

MS-17. Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.

Response: Contractor shall comply. See Maintenance, Sheet C5b.

MS-18. All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.

Response: Contractor shall comply. See Management Strategies.

MS-19. Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels:

a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

Response: City shall comply with identified Stormwater Capital Improvement Plan project.

b. Adequacy of all channels and pipes shall be verified in the following manner:

(1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question;

Response: Not applicable to this project.

(2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

Response: Two year event has been analyzed.

(b) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and

Response: Ten year storm has been analyzed

(c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.

Response: 10-year event is utilized for new pipes. Existing pipes may predate minimum standards and City Engineering Dept shall determine adequacy of existing pipes.

c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:

(1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks; or

Response: City shall comply with identified Stormwater Capital Improvement Plan project.

(2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;

Response: City shall comply with identified Stormwater Capital Improvement Plan project.

(3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or

Response: Not applicable to this project.

(4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion.

Response: Not applicable to this project.

d. The applicant shall provide evidence of permission to make the improvements.

Response: Easements shall be documented as necessary.

e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development of the subject project.

Response: Project complies with applicable requirements;

f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.

Response: Not applicable to this project.

g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.

Response: Not applicable to this project.

h. All on-site channels must be verified to be adequate.

Response: On Site Channels are adequate.

i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.

Response: Not applicable to this project.

j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.

Response: Engineer shall comply.

k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

Response: Project complies; contractor will comply with approved plans and notes herein.

l. Any plan approved prior to July 1, 2014, that provides stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate and velocity requirements for natural or man-made channels if the practices are designed to (i) detain the water quality volume and release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the Act.

Response: Not applicable to this project.

m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) Regulations.

Response: Not applicable to this project.

n. Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) Regulations shall be deemed to satisfy the requirements of subdivision 19 of this subsection.

Response: Not applicable to this project.

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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS NOTES

Designed:	D.B.D.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	C5A
Checked:	R.D.P.		

NARRATIVE

PROJECT DESCRIPTION:
THE PROJECT LOCATION IS THE SOUTHEAST QUADRANT OF ROANOKE CITY ALONG GARDEN CITY BOULEVARD BETWEEN YELLOW MOUNTAIN ROAD AND IVYWOOD STREET.
THE PURPOSE OF THE PROJECT IS TO CONSTRUCT A NEW "SAFE ROUTES TO SCHOOL" PEDESTRIAN WALKWAY ON THE EAST SIDE OF GARDEN CITY BOULEVARD, WHICH WILL SERVE GARDEN CITY ELEMENTARY SCHOOL. ASSOCIATED WORK INCLUDES NEW CURB AND GUTTER, NEW DRAINAGE INLETS AND STORM SEWER, AND UTILITY RELOCATION AS NECESSARY. ROADWAY MILLING AND PAVING WILL BE NECESSARY FOLLOWING PROJECT CONSTRUCTION AND WILL BE ACCOMPLISHED BY THE CITY'S TRANSPORTATION DIVISION AS PART OF A SEPARATE PROJECT.
THIS PROJECT MEETS THE REQUIREMENTS OF THE ROANOKE CITY STORMWATER MANAGEMENT (SWM) ORDINANCE (REVISED APRIL 2012), FOR LINEAR PROJECTS, SO THAT NO POST DEVELOPMENT STORMWATER MANAGEMENT IS REQUIRED FOR THIS PROJECT.

THE FOLLOWING DISTURBED AREAS PER OUTFALL HAVE BEEN IDENTIFIED:
OUTFALL 1: 0.05 AC
OUTFALL 2: 0.14 AC
OUTFALL 3: 0.15 AC
OUTFALL 4: 0.00 AC
OUTFALL 5: 0.10 AC
OUTFALL 6: 0.03 AC

EXISTING SITE CONDITIONS:
GARDEN CITY BOULEVARD IS A TWO LANE (ONE EACH WAY) COLLECTOR STREET IN A MOSTLY RESIDENTIAL AREA WITH MINOR RETAIL STORES. THE ROAD LACKS STORM DRAINAGE PIPES EXCEPT AT TWO SAG AREAS AND IS A MIX OF CURBED AND UNCURBED SECTIONS. THERE ARE SEVERAL LOCATIONS WHERE ROADWAY DRAINAGE DISCHARGES ONTO PRIVATE PROPERTY OR ADJACENT ROADS.

ADJACENT PROPERTY:
ADJACENT PROPERTIES ARE PRIVATE RESIDENCES OR RETAIL STORES. ADJACENT PROPERTIES DRAIN TOWARDS THE ROAD IN SOME AREAS AND AWAY FROM THE ROAD IN SOME AREAS. THE ROAD DRAINS TO THE GARNAND BRANCH ON THE EAST SIDE, AND A TRIB TO GUM SPRINGS BRANCH ON THE WEST. THE PROJECT HAS NO STREAM CROSSINGS OR FLOODPLAIN IMPACTS

OFF SITE AREAS:
THIS PROJECT MAY REQUIRE SMALL STORAGE AREAS FOR EXCAVATED MATERIALS. IF THE CONTRACTOR REQUIRES AN OFFSITE DISPOSAL/STOCKPILE AREA, A SUPPLEMENTAL EROSION AND SEDIMENT CONTROL PLAN SHALL BE SUBMITTED TO AND APPROVED BY THE CITY PRIOR TO ANY OFFSITE LAND DISTURBING ACTIVITIES. CONTRACTOR IS TO PROVIDE THIS AT THE PRE-CONSTRUCTION MEETING.

SOIL:
THE PROJECT AREA CONSISTS OF "HAYESVILLE-URBAN" (SOIL UNIT 29C) SOILS ALONG THE ENTIRE PROJECT. THESE SOILS ARE DEEP SOILS COMPOSED OF WEATHERED GRANITE AND ARE IN HYDROLOGIC GROUP B.

CRITICAL EROSION AREAS:
THERE ARE NO CRITICAL EROSION AREAS WITHIN THE PROJECT LIMITS.

EROSION AND CONTROL MEASURES:
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS, THE VDOT SPECIFICATIONS, VOLUME I OF THE VDOT ROAD AND BRIDGE STANDARDS, AND THE VA. EROSION AND SEDIMENT CONTROL HANDBOOK. THE MINIMUM STANDARDS SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.
1. SILT FENCE-VDOT STD EC-5: SILT FENCE SHALL BE USED WHERE INDICATED ON THE PLANS WHERE MINOR SHEET FLOW DRAINAGE WILL OCCUR FROM DISTURBED AREAS.
2. STORM DRAIN INLET PROTECTION TYPE A AND B-VDOT STD EC-6: TEMPORARY INLET PROTECTION MEASURES ARE REQUIRED AROUND CURB AND GRATE INLETS.
3. SEEDING-VDOT SPECIFICATION SECTION 603: SURFACE ROUGHENING AND TEMPORARY SEEDING WILL FOLLOW IMMEDIATELY AFTER GRADING. UPON FINAL PLACEMENT OF FILL AND TOPSOIL, SOIL STABILIZATION MATS WILL BE INSTALLED AND SLOPES SEEDED.

MANAGEMENT STRATEGIES:
1. SILT FENCES SHALL BE INSTALLED AS A FIRST STEP IN GRADING.
2. TEMPORARY SEEDING OR OTHER STABILIZATION SHALL FOLLOW IMMEDIATELY AFTER GRADING.
3. THE PROJECT CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
4. UPON COMPLETION OF THE PROJECT, TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WILL BE REMOVED ONLY AFTER DETERMINATION BY THE CITY OF ROANOKE THAT THE SITE HAS BEEN ADEQUATELY STABILIZED.

PERMANENT STABILIZATION:
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING FOLLOWING FINISHED GRADING. TOPSOIL, SEEDING, LIME, FERTILIZER AND MULCH SHALL BE PLACED ACCORDING TO VDOT SPECIFICATIONS SECTION 603.

MAINTENANCE:
IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:
1. SILT/FILTER BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
2. SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.
3. WHEN SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL "IMMEDIATELY" BE CLEANED. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THE MANNER.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

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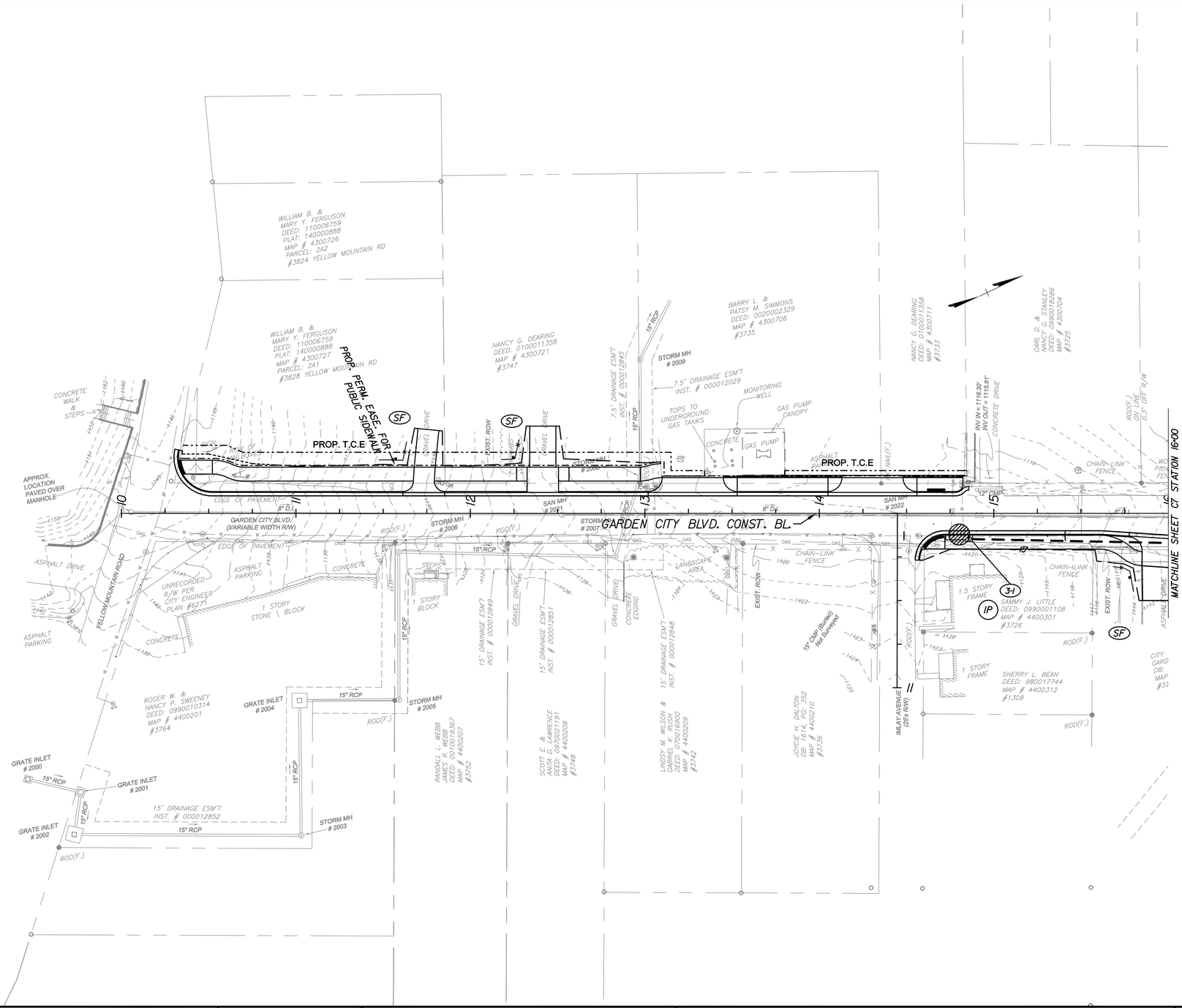
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

E & S CONTROL NARRATIVE AND E & S NOTES

		DATE	SHEET NUMBER
Designed:	D.B.D.	FEB 2015	C5B
Drawn:	R.D.W.		
Checked:	R.D.P.		



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LEGEND

(IP) DENOTES INLET PROTECTION

(SF) DENOTES SILT FENCE

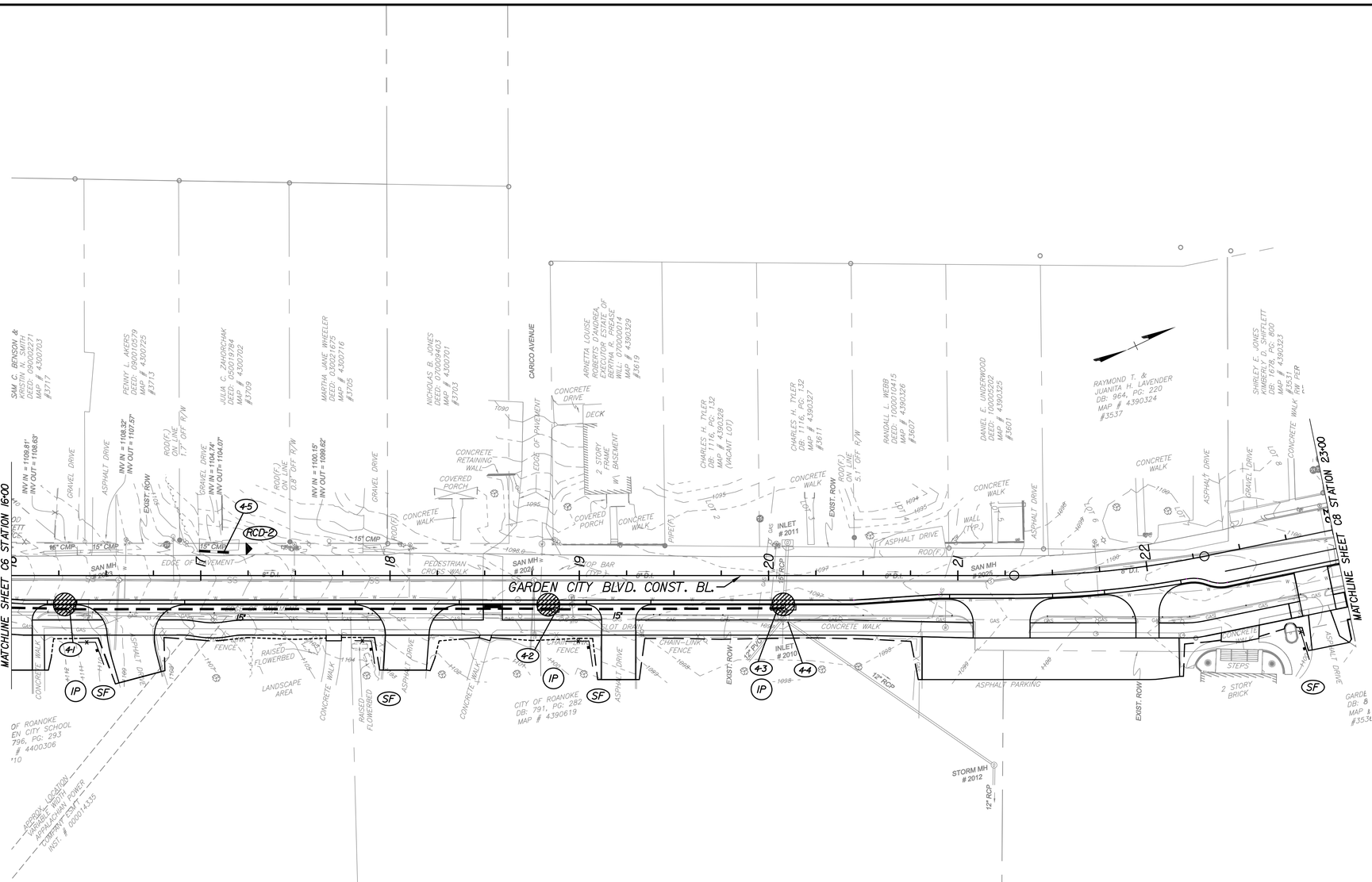
(RCD-2) DENOTES ROCK CHECK DAM TYPE 2

NOTE: SEE PLAN & PROFILE VIEWS FOR DRAINAGE DESCRIPTIONS.

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

E&SC PLAN VIEW

Designed: D.B.D.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C6
Checked: R.D.P.		



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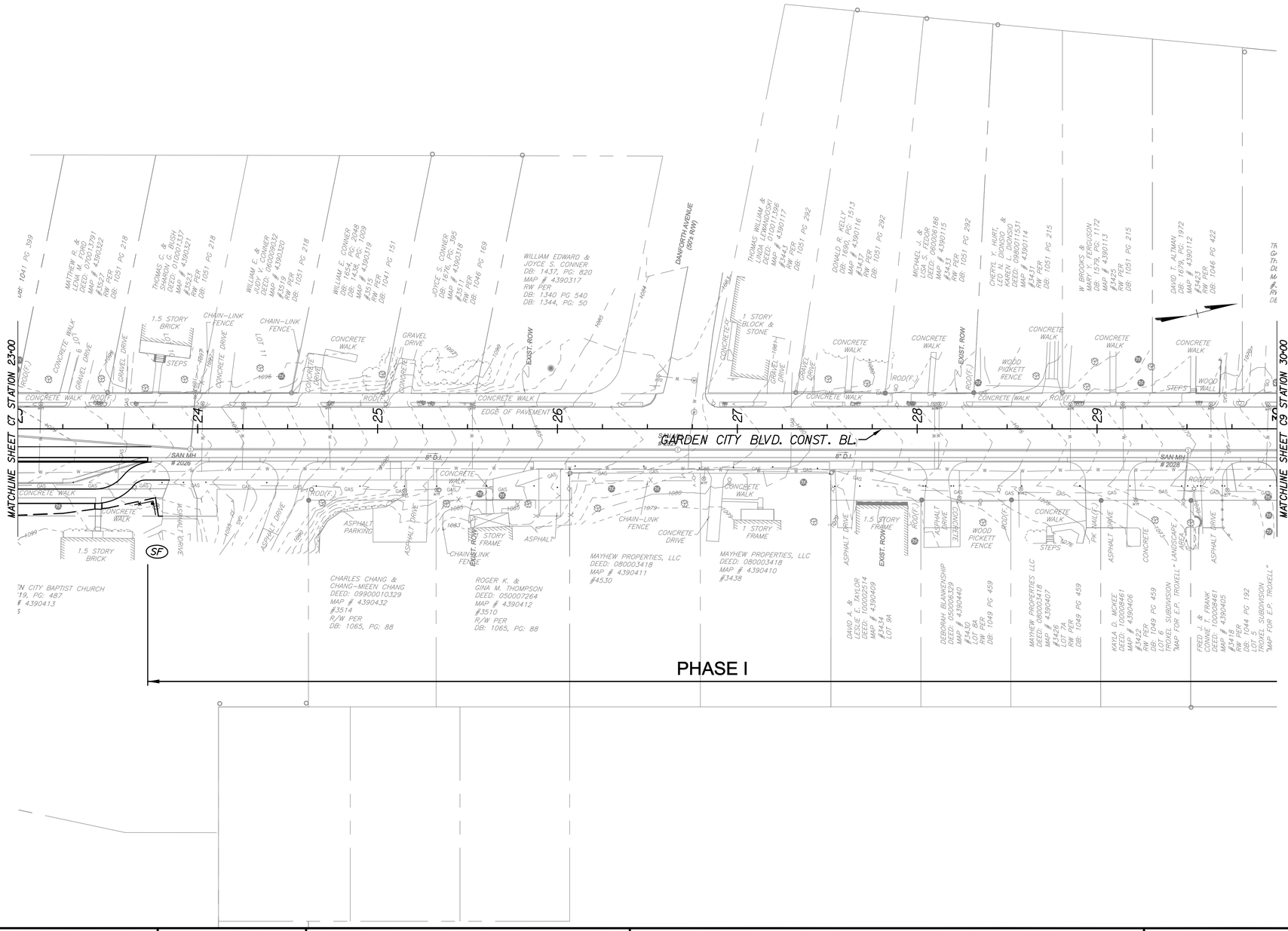
E&SC PLAN VIEW

Designed:	D.B.D.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	C7
Checked:	R.D.P.		



SCALE
0 30' 60'

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LEGEND

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- (SF) *DENOTES SILT FENCE*
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SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

E&SC PLAN VIEW

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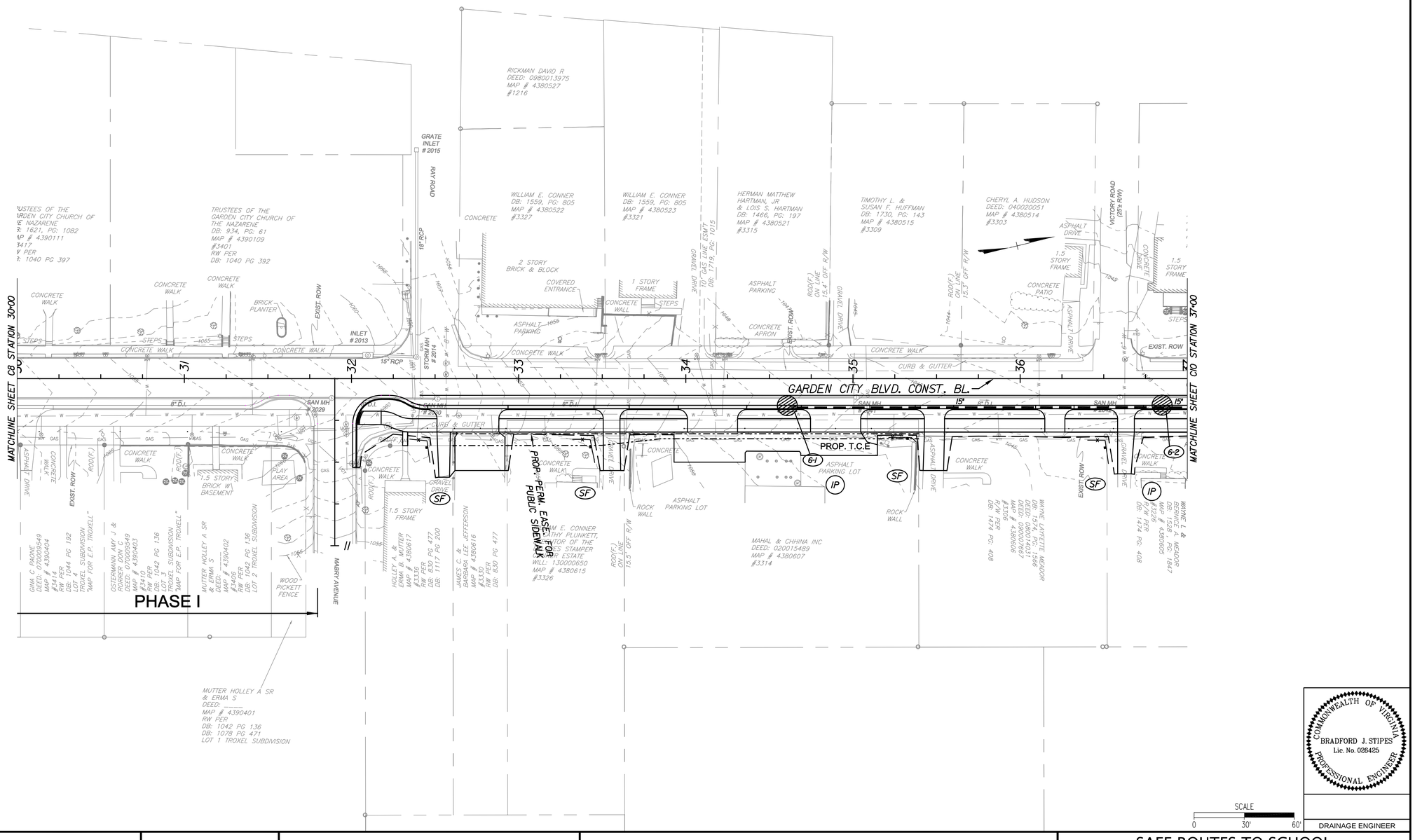
Drawn:	R.D.W.	FEB 2015	C8
Checked:	R.D.P.		



SCALE
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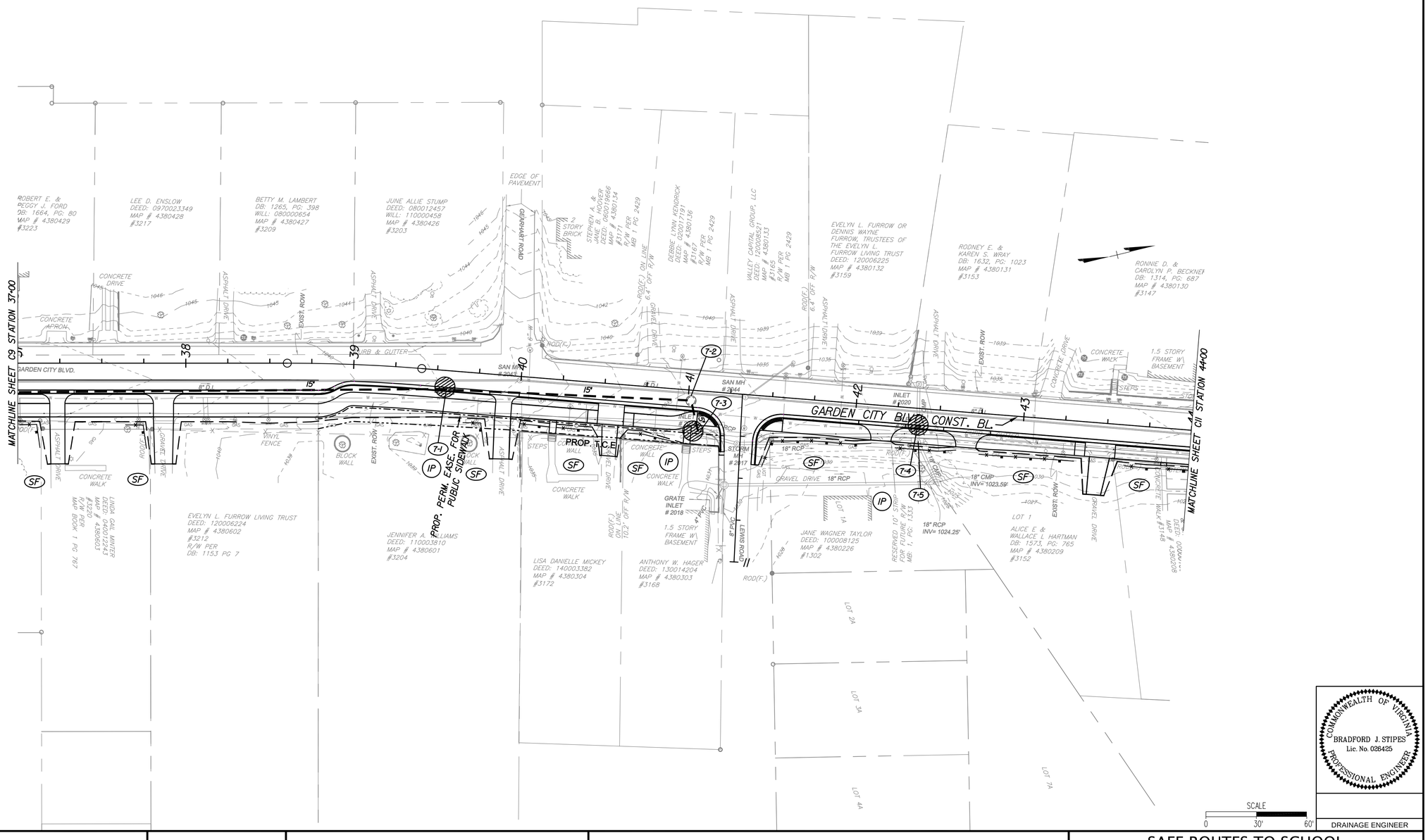
SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

E&SC PLAN VIEW

Designed: D.B.D.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C9
Checked: R.D.P.		



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SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

E&SC PLAN VIEW

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Drawn:	R.D.W.	FEB 2015	C10
Checked:	R.D.P.		

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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

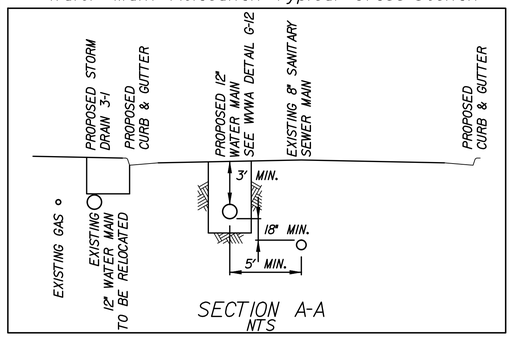
E&SC PLAN VIEW

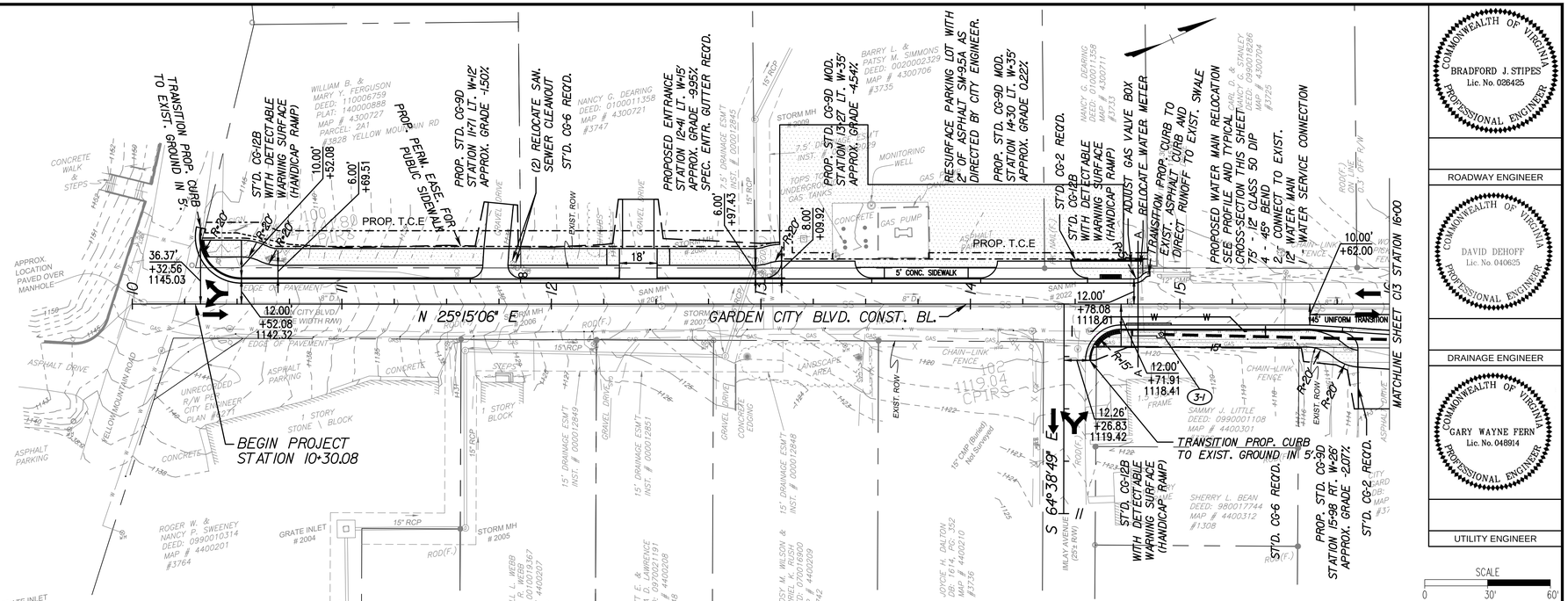
		DATE	SHEET NUMBER
Designed:	D.B.D.	FEB 2015	C11
Drawn:	R.D.W.		
Checked:	R.D.P.		

LEGEND:

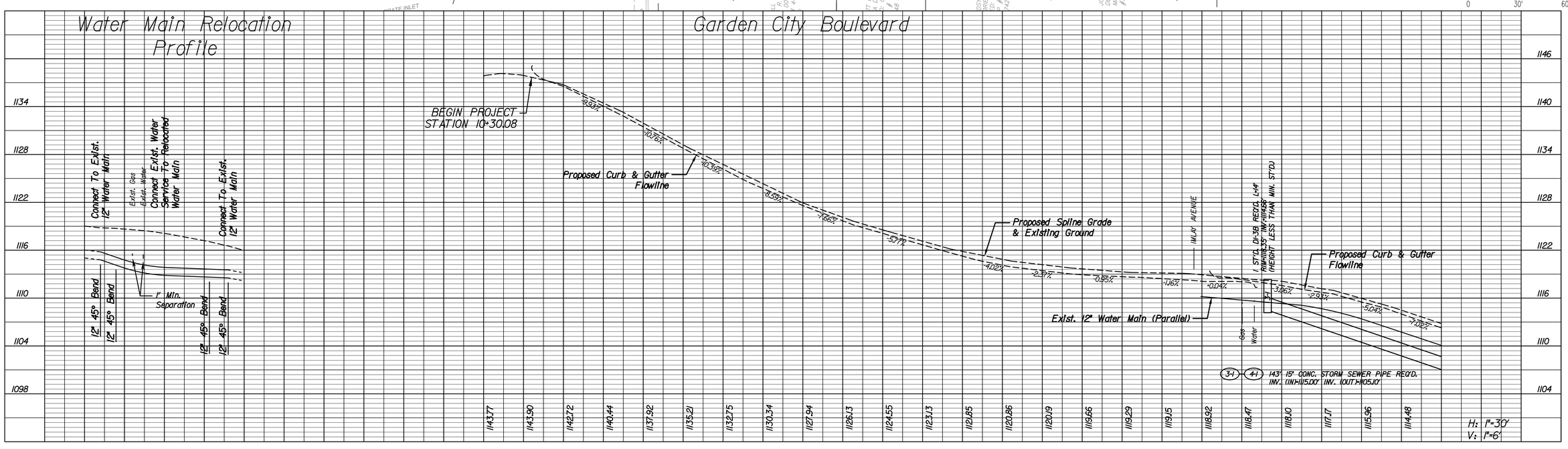
- PROP. LIMITS OF DISTURBANCE (CUT AREA)
- PROP. LIMITS OF DISTURBANCE (FILL AREA)
- T.C.E. TEMPORARY CONSTRUCTION EASEMENT
- EXIST. WATER MAIN TO BE ABANDONED

Water Main Relocation Typical Cross-Section





Water Main Relocation Profile — Garden City Boulevard



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REV: 03-25-2015
REVISED SIDEWALK AND PARKING LOT STATION 13+00 TO 14+75 LT.
REVISED STRUCT. 3-1.

DENOTES PROPOSED PAVEMENT

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NOTES:
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DRAINAGE ENGINEER

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GARY WAYNE FERN
Lic. No. 048914
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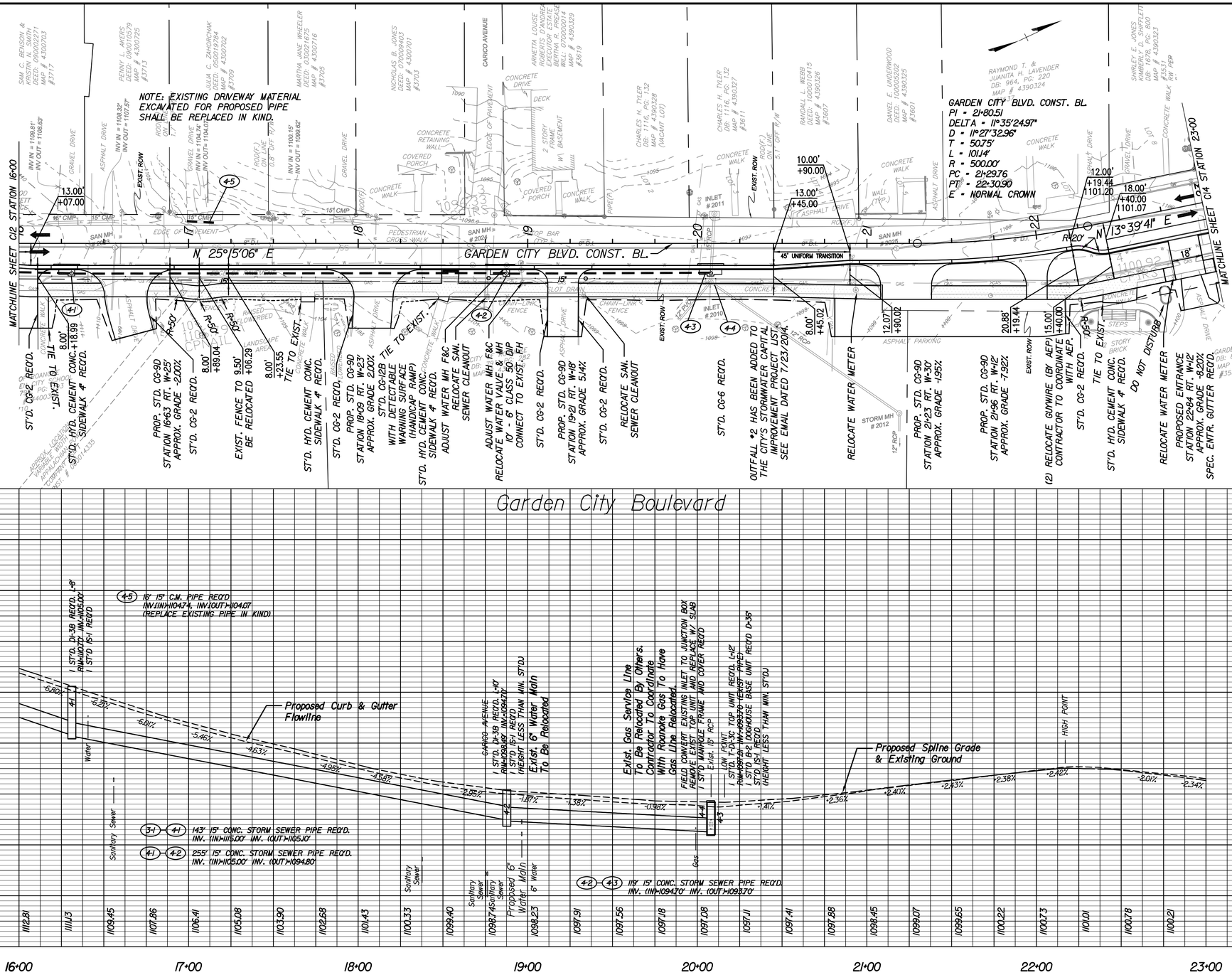
UTILITY ENGINEER

SCALE
0 30' 60'

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

PLAN & PROFILE VIEW

Designed: A.J.K./D.B.D	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C12
Checked: R.D.P.		



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SCALE
0 30' 60'

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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

PLAN & PROFILE VIEW

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Drawn: R.D.W.	FEB 2015	C13
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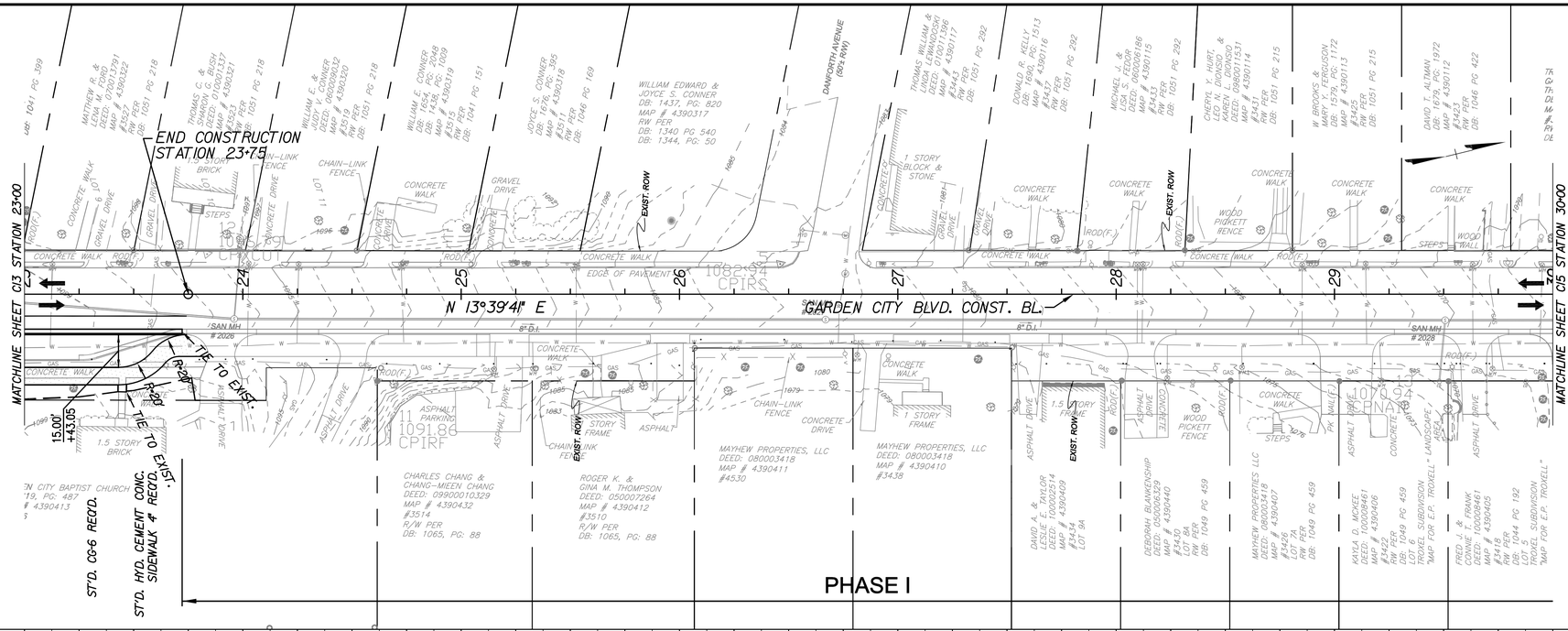

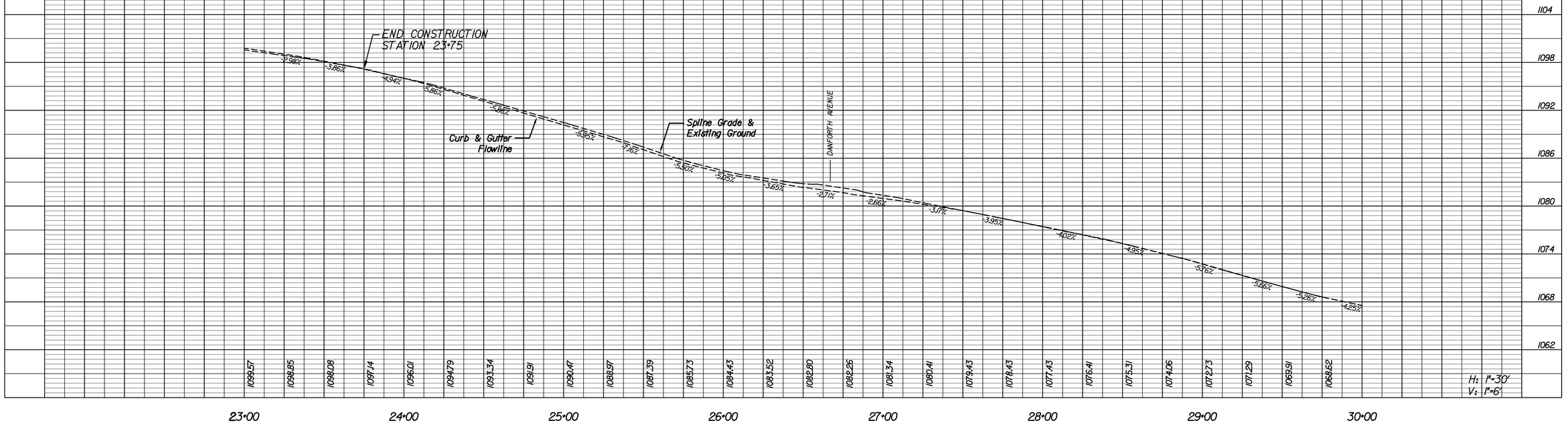

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SAFE ROUTES TO SCHOOL
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PLAN & PROFILE VIEW

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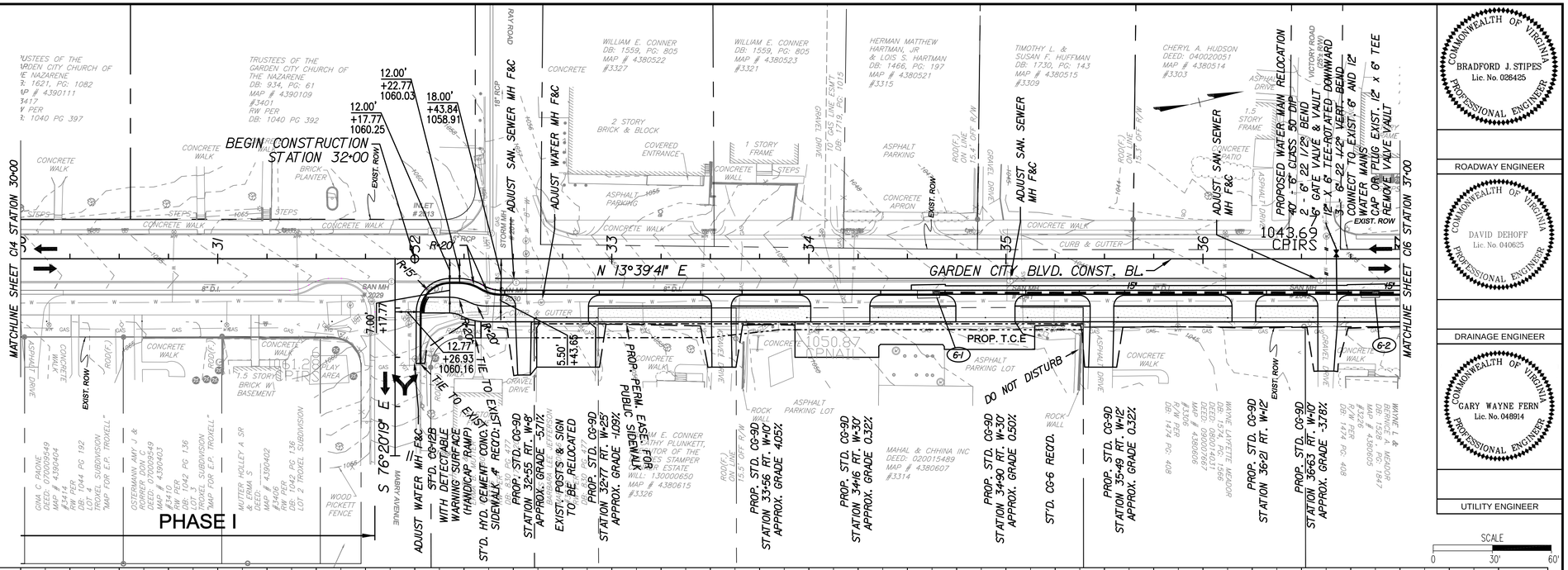

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SAFE ROUTES TO SCHOOL
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PLAN & PROFILE VIEW

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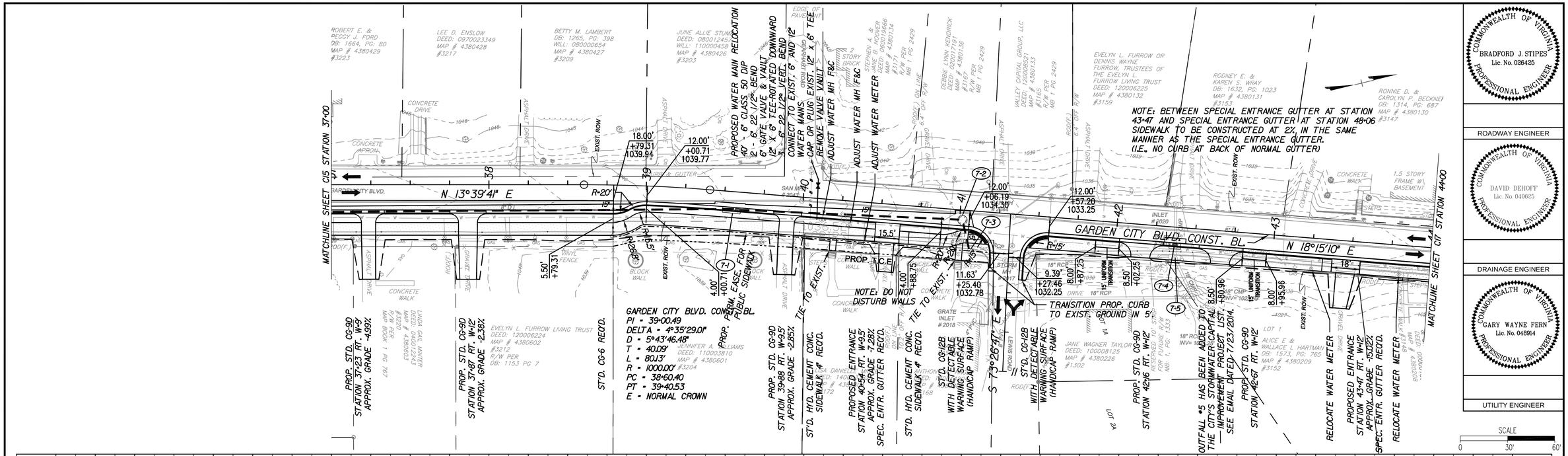

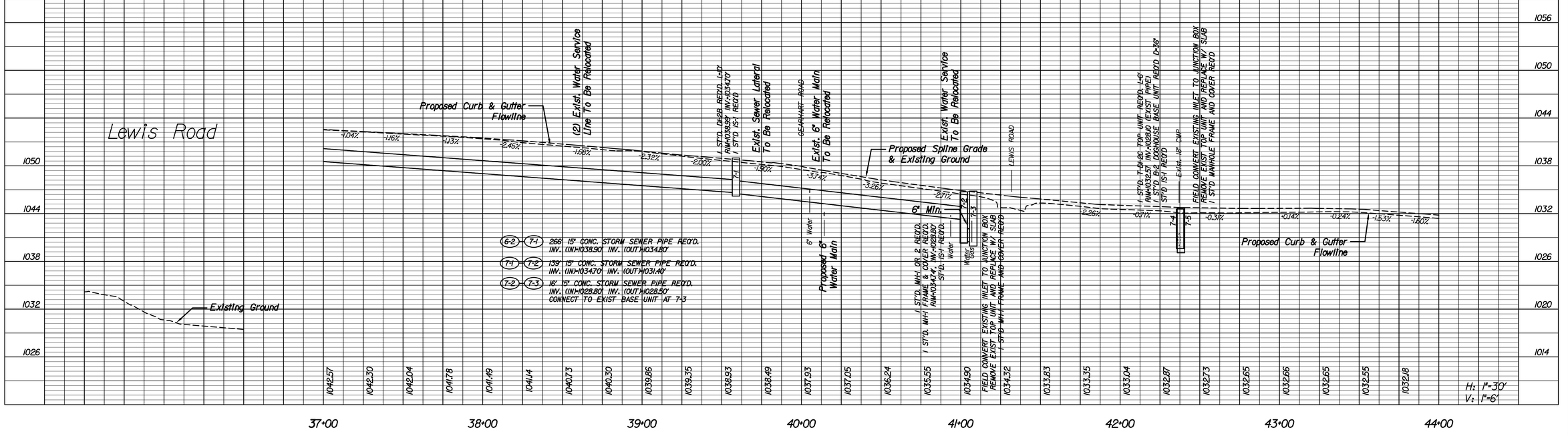

6-2 → 7-1: 266' 15" CONC. STORM SEWER PIPE REQ'D. INV. (IN)=1038.90' INV. (OUT)=1034.80'

7-1 → 7-2: 139' 15" CONC. STORM SEWER PIPE REQ'D. INV. (IN)=1034.70' INV. (OUT)=1031.40'

7-2 → 7-3: 16' 15" CONC. STORM SEWER PIPE REQ'D. INV.: (IN)=1028.80' INV. (OUT)=1028.50' CONNECT TO EXIST. BASE UNIT AT 7-3

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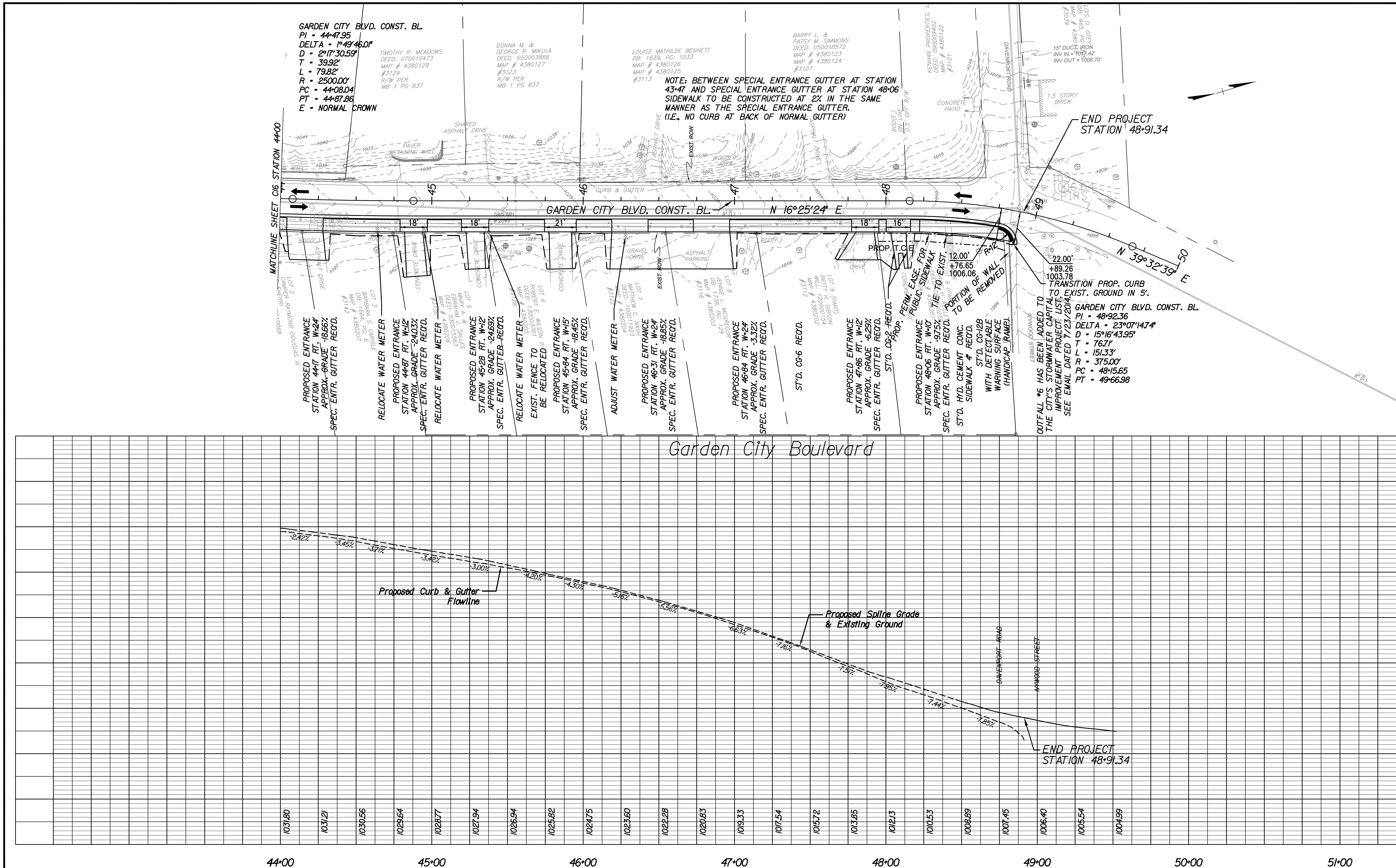
UTILITY ENGINEER

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

PLAN & PROFILE VIEW

Designed: A.J.K./D.B.D	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C16
Checked: R.D.P.		



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WHITMAN, REQUARDT & ASSOCIATES, LLP
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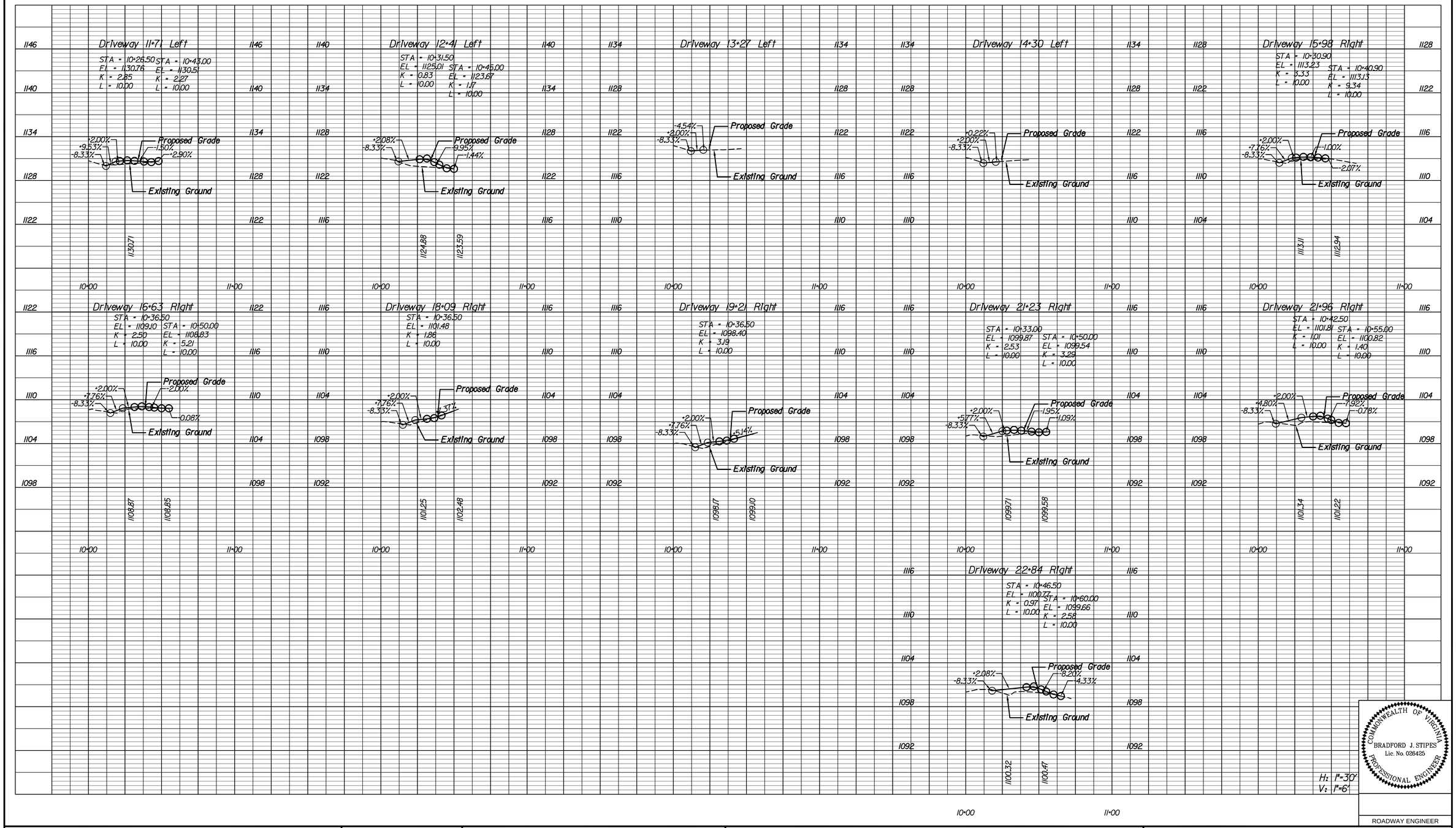
BLACKSBURG, VA 24060

NOTES:
1. WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
2. CONTRACTOR SHALL RELOCATE ALL WATER METERS, VALVE BOXES, AND SANITARY SEWER CLEANOUTS TO A LOCATION OUTSIDE OF THE PROPOSED PAVED WALKWAY AND WITHIN THE RIGHT OF WAY.
3. CONTRACTOR SHALL RELOCATE ALL WATER AND SEWER SERVICE LINES AS NEEDED OR SHOWN TO AVOID CONFLICTS WITH PROPOSED IMPROVEMENTS.
4. CONSTRUCT ALL DRIVEWAYS AT THE SAME WIDTH AS THE EXISTING DRIVEWAY.
5. ALL NEW UTILITIES SHALL BE LOCATED UNDERGROUND IN ACCORDANCE WITH THE CITY CODE SEC. 36.2-610.

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

PLAN & PROFILE VIEW

Designed: A.J.K./D.B.D	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C17
Checked: R.D.P.		



BRADFORD J. STIPES
Lic. No. 026425
COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

ROADWAY ENGINEER

ROANOKE

OFFICE OF THE CITY ENGINEER
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PHONE: (540) 853-2731
FAX: (540) 853-1364
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BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

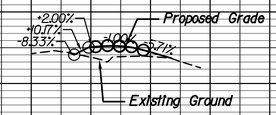
DRIVEWAY PROFILES

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C18
Checked: R.D.P.		

Driveway 32+55 Right

STA = 10+32.00
EL = 1059.18
K = 3.33
L = 10.00

STA = 10+42.00
EL = 1059.08
K = 2.13
L = 10.00

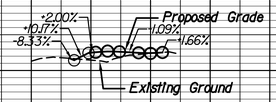


1059.04 1058.63

Driveway 32+77 Right

STA = 10+32.00
EL = 1057.63
K = 3.24
L = 10.00

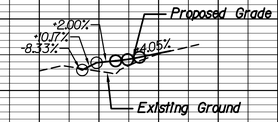
STA = 10+50.00
EL = 1057.43
K = 3.64
L = 10.00



1057.49 1057.46

Driveway 33+56 Right

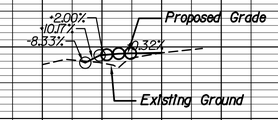
STA = 10+37.00
EL = 1052.59
K = 4.87
L = 10.00



1052.35 1053.11

Driveway 34+16 Right

STA = 10+32.00
EL = 1049.45
K = 5.96
L = 10.00

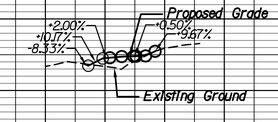


1049.31 1049.50

Driveway 34+90 Right

STA = 10+32.00
EL = 1046.85
K = 6.68
L = 10.00

STA = 10+42.00
EL = 1046.90
K = 0.87
L = 8.00



1046.71

10+00 11+00

Driveway 35+49 Right

STA = 10+32.00
EL = 1045.46
K = 5.94
L = 10.00

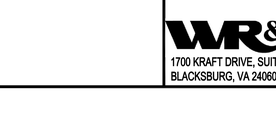
1045.32 1045.52

Driveway 36+63 Right

STA = 10+32.00
EL = 1043.82
K = 3.33
L = 10.00

STA = 10+42.00
EL = 1043.82
K = 3.59
L = 10.00

STA = 10+52.00
EL = 1043.44
K = 1.94
L = 10.00



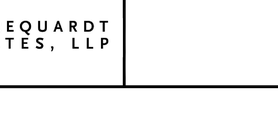
1043.78 1043.54

Driveway 37+23 Right

STA = 10+32.00
EL = 1043.05
K = 3.33
L = 10.00

STA = 10+42.00
EL = 1042.95
K = 2.51
L = 10.00

STA = 10+52.00
EL = 1042.45
K = 1.87
L = 10.00



1042.91 1042.57

Driveway 37+87 Right

STA = 10+32.00
EL = 1042.35
K = 3.33
L = 10.00

STA = 10+42.00
EL = 1042.25
K = 7.25
L = 10.00

STA = 10+52.00
EL = 1042.01
K = 3.95
L = 10.00

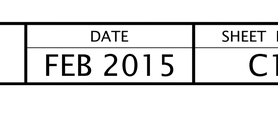
1042.21 1042.07

Driveway 39+88 Right

STA = 10+24.50
EL = 1038.61
K = 3.33
L = 10.00

STA = 10+34.50
EL = 1038.51
K = 5.41
L = 10.00

STA = 10+45.00
EL = 1038.22
K = 2.44
L = 10.00



1038.58 1038.28

10+00 11+00

H: 1"=30'
V: 1"=6'

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

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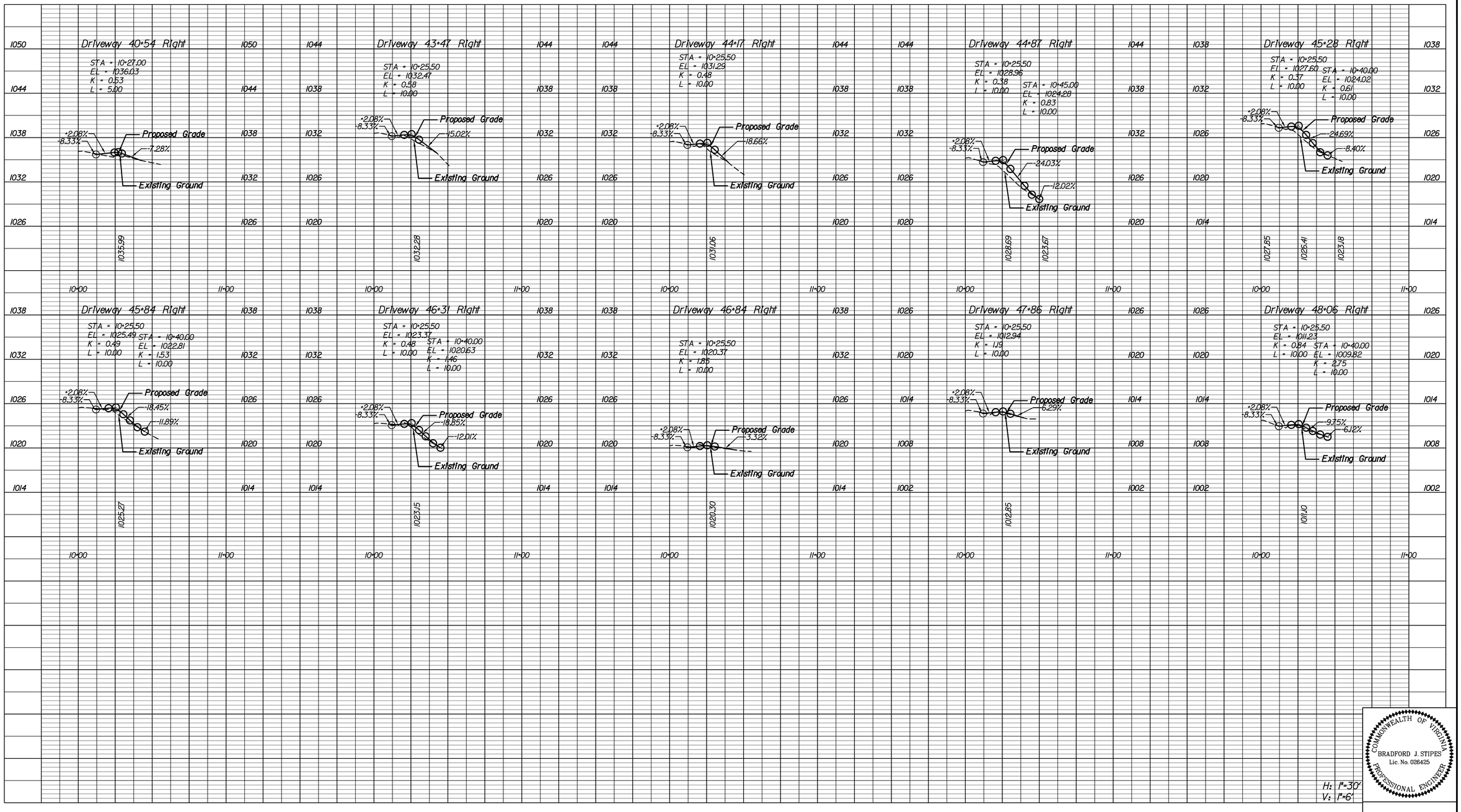
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

DRIVEWAY PROFILES

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C19
Checked: R.D.P.		



H: 1"=30'
V: 1"=6'

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 028425
PROFESSIONAL ENGINEER

ROADWAY ENGINEER

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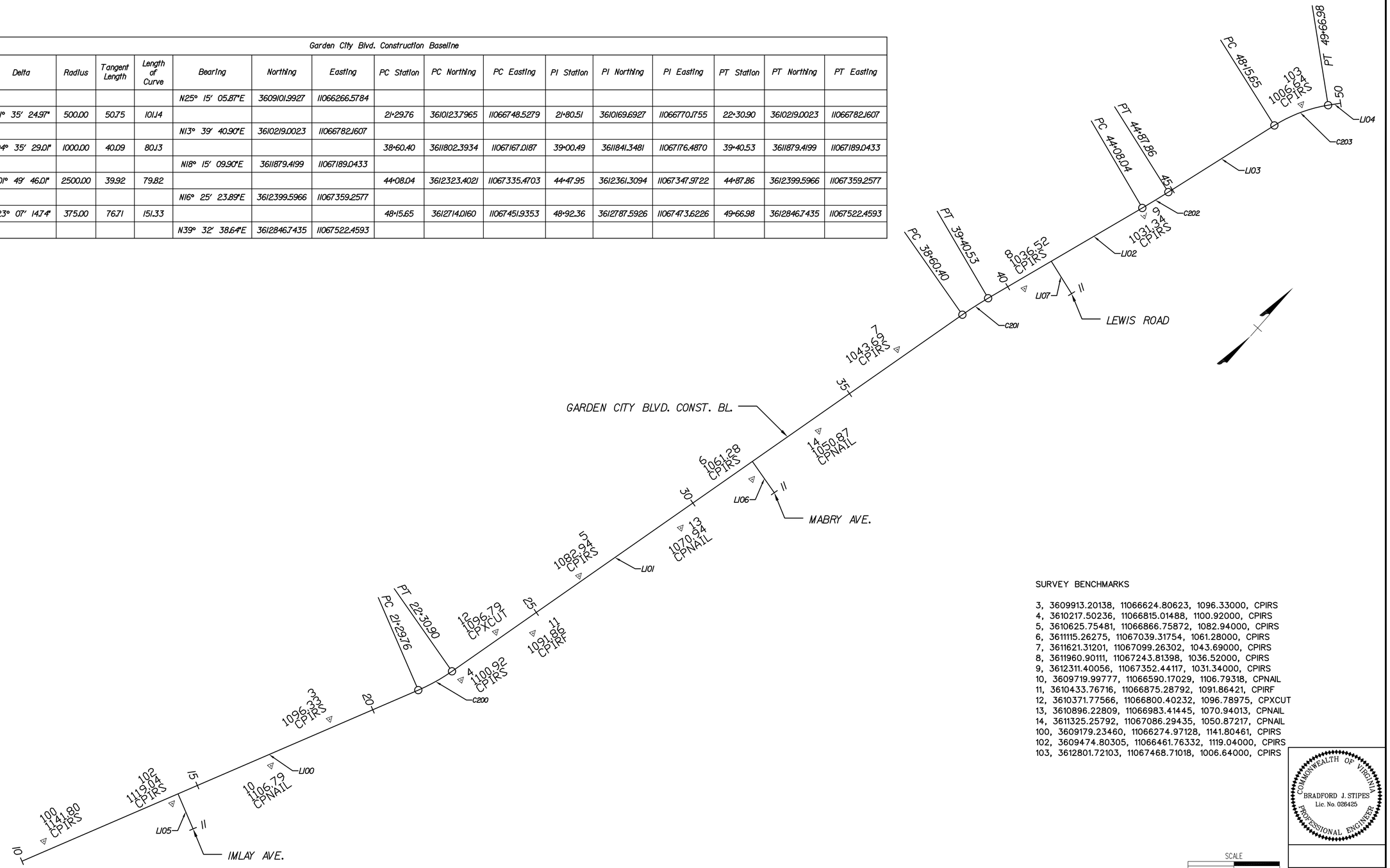
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

DRIVEWAY PROFILES

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	C20
Checked: R.D.P.		

Garden City Blvd. Construction Baseline																	
Number	Starting Station	Delta	Radius	Tangent Length	Length of Curve	Bearing	Northing	Easting	PC Station	PC Northing	PC Easting	PI Station	PI Northing	PI Easting	PT Station	PT Northing	PT Easting
LI00	10+00.00					N25° 15' 05.87"E	3609101.9927	11066266.5784									
C200		011° 35' 24.97"	500.00	50.75	101.14				21+29.76	3610123.7965	11066748.5279	21+80.51	3610169.6927	11066770.1755	22+30.90	3610219.0023	11066782.1607
LI01	22+30.90					N13° 39' 40.90"E	3610219.0023	11066782.1607									
C201		004° 35' 29.01"	1000.00	40.09	80.13				38+60.40	3611802.3934	11067167.0187	39+00.49	3611841.3481	11067176.4870	39+40.53	3611879.4199	11067189.0433
LI02	39+40.53					N18° 15' 09.90"E	3611879.4199	11067189.0433									
C202		001° 49' 46.01"	2500.00	39.92	79.82				44+08.04	3612323.4021	11067335.4703	44+47.95	3612361.3094	11067347.9722	44+87.86	3612399.5966	11067359.2577
LI03	44+87.86					N16° 25' 23.89"E	3612399.5966	11067359.2577									
C203		023° 07' 14.74"	375.00	76.71	151.33				48+15.65	3612714.0160	11067451.9353	48+92.36	3612787.5926	11067473.6226	49+66.98	3612846.7435	11067522.4593
LI04	49+66.98					N39° 32' 38.64"E	3612846.7435	11067522.4593									



SURVEY BENCHMARKS

3, 3609913.20138, 11066624.80623, 1096.33000, CPIRS
4, 3610217.50236, 11066815.01488, 1100.92000, CPIRS
5, 3610625.75481, 11066866.75872, 1082.94000, CPIRS
6, 3611115.26275, 11067039.31754, 1061.28000, CPIRS
7, 3611621.31201, 11067099.26302, 1043.69000, CPIRS
8, 3611960.90111, 11067243.81398, 1036.52000, CPIRS
9, 3612311.40056, 11067352.44117, 1031.34000, CPIRS
10, 3609719.99777, 11066590.17029, 1106.79318, CPNAIL
11, 3610433.76716, 11066875.28792, 1091.86421, CPIRF
12, 3610371.77566, 11066800.40232, 1096.78975, CPXCUT
13, 3610896.22809, 11066983.41445, 1070.94013, CPNAIL
14, 3611325.25792, 11067086.29435, 1050.87217, CPNAIL
100, 3609179.23460, 11066274.97128, 1141.80461, CPIRS
102, 3609474.80305, 11066461.76332, 1119.04000, CPIRS
103, 3612801.72103, 11067468.71018, 1006.64000, CPIRS

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

SCALE
0 120' 240'

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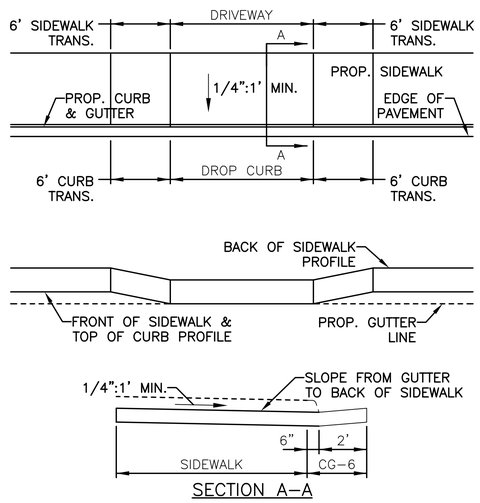
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

ALIGNMENT DATA

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	D1
Checked: R.D.P.		

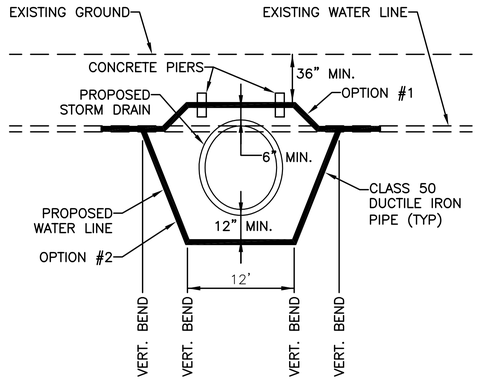


SECTION A–A

SPECIAL ENTRANCE GUTTER

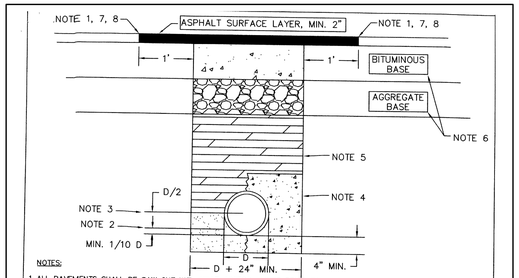
NTS

NOTE: JOINTS TO BE RESTRAINED WITH RETAINER GLANDS.



WATER LINE RELOCATION PROFILE

NOTE: WATERLINE RELOCATION TO UTILIZE OPTION #1 AS LONG AS A MINIMUM COVER OF 3 FEET CAN BE PROVIDED OVER THE WATERLINE. IF CONDITIONS IN FIELD DO NOT ALLOW THIS TO OCCUR, OPTION #2 MAY BE UTILIZED. COORDINATE ALL WORK WITH THE WESTERN VIRGINIA WATER AUTHORITY. EVERY EFFORT SHOULD BE MADE TO UTILIZE OPTION #1 IF POSSIBLE.



NOTES:

1. ALL PAVEMENTS SHALL BE SAW CUT WITH NEAT, UNIFORM LINES PRIOR TO EXCAVATION.
2. PIPE BEDDING MATERIAL SHALL BE CRUSHER RUN (VDOT NO. 25 OR 26) OR OPEN GRADED AGGREGATE (VDOT NO. 57, 68, 7, OR 8). ALTERNATE MATERIAL MUST BE APPROVED BY THE CITY ENGINEER.
3. MAXIMUM DEPTH OF PIPE BEDDING MATERIAL IF USING OPEN GRADED AGGREGATE FOR BEDDING.
4. OPTIONAL CONCRETE ENCASEMENT FOR POWER OR COMMUNICATION CONDUIT. PROVIDE A MINIMUM OF 4" CONCRETE COVER FROM ALL SIDES OF CONDUIT.
5. BACKFILL MATERIAL SHALL BE VDOT NO. 21A AGGREGATE, PLACED IN LOOSE LIFTS NOT EXCEEDING 6", AND COMPACTED TO AT LEAST 95% MAXIMUM DRY DENSITY WITHIN 2 PERCENTAGE POINTS OF OPTIMUM MOISTURE (VTM-1) WITH THE USE OF MECHANICAL TAMPERS OR VIBRATORY ROLLERS. WATER COMPACTION IS NOT PERMITTED. TYPE I SELECT MATERIAL MAY BE USED AS BACKFILL UPON PRIOR APPROVAL BY THE CITY ENGINEER. MATERIAL CLASSIFICATION SHALL BE PERFORMED ON THE ACTUAL SOIL TO VERIFY THAT SOIL MEETS VDOT SPECIFICATIONS FOR TYPE I SELECT MATERIAL BY A QUALIFIED TESTING LABORATORY AND TEST RESULTS SHALL BE CERTIFIED BY A VIRGINIA REGISTERED PROFESSIONAL ENGINEER. DENSITY REQUIREMENS ARE THE SAME AS ABOVE, HOWEVER, MOISTURE CONTENT FOR SOILS MAY WITH WITHIN 20% OF OPTIMUM.

   ALL TESTING SHALL BE PERFORMED AND CERTIFIED BY A GEOTECHNICAL ENGINEER OR A VDOT-CERTIFIED TECHNICIAN. RESULTS SHALL BE PROVIDED TO THE INSPECTOR WITHIN 24 HOURS OF TESTING COMPLETION. THE COST OF ALL TESTING IS THE RESPONSIBILITY OF THE PERMITTEE. FIELD DENSITY TESTING METHODS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO PERFORMING ANY TESTING.
6. ALL PAVEMENTS SHALL BE RESTORED TO MATCH DEPTHS OF EXISTING SURFACE, BASE, AND AGGREGATE LAYERS. THE ASPHALT SURFACE LAYER SHALL BE A MINIMUM OF 2" THICK AND EXTEND OVER UNDISTURBED BASE A MINIMUM OF 12" ON ALL SIDES. ALL PAVEMENT MATERIALS SHALL MEET VDOT REQUIREMENTS FOR SURFACE MIX (SM-9.5A, SM-9.5A, OR SM-12.5D), BASE MIX (BM-25), AND STONE AGGREGATE (21A OR 21B). PLANT CERTIFICATION FOR EACH MATERIALS, THE INSPECTOR SHALL DETERMINE AN ACCEPTABLE MATERIAL.
7. THE REPAIR SHALL BE RECTANGULAR AND SAW CUT IN STRAIGHT, UNIFORM LINES THAT ARE ALIGNED WITH THE STREET CENTERLINE. WHEN EDGES OF PAVEMENT HAVE BEEN UNDERMINED, PAVEMENT SHALL BE REMOVED TO A NEAT LINE 12" BEYOND THE UNDERMINED AREA. THE FINISHED PATCH SURFACE SHALL BE WITHIN 1/4 INCH AT ANY POINT ACROSS THE PATCH AS IT RELATES TO THE SURROUNDING STREET SURFACE.
8. A FULL COVERAGE TACK COAT IS REQUIRED ON ALL SURFACES THAT WILL CONTACT THE NEW SURFACE LAYER.

OFFICE OF THE CITY ENGINEER – ROANOKE, VIRGINIA

APPROVED: _____ CITY ENGINEER

DATE: 12/01/04

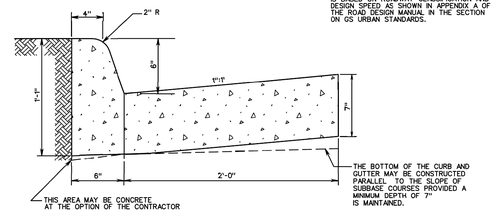
UTILITY TRENCH REPAIR IN PAVEMENT USING VDOT NO. 21A AGGREGATE

3 OF 9

CG-6

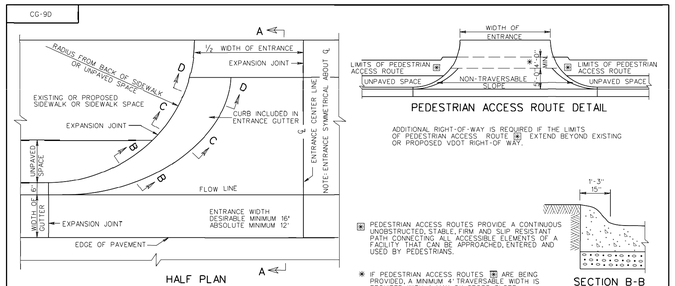
NOTES:

1. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
2. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
3. COMBINATION CURB & GUTTER HAVING A RADIUS OF 300 FEET OR LESS (ALONG FACE OF CURB) SHALL BE FAB. FOR AS RADIAL COMBINATION CURB & GUTTER.
4. FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER, THE BOTTOM OF THE CURB & GUTTER SHALL BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES AND TO THE DEPTH OF THE PAVEMENT.
5. ALLOWABLE CRITERIA FOR THE USE OF CG-6 IS BASED ON ROADWAY CLASSIFICATION AND DESIGN SPEED AS SHOWN IN APPENDIX A OF THE ROAD DESIGN MANUAL IN THE SECTION ON GS URBAN STANDARDS.



SPECIFICATION REFERENCE	COMBINATION 6" CURB AND GUTTER	VDOT ROAD AND BRIDGE STANDARDS
105 502	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE: — SHEET 1 OF 1 201.03

CG-9D



HALF PLAN

PEDESTRIAN ACCESS ROUTE DETAIL

ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE ⊞ EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF WAY.

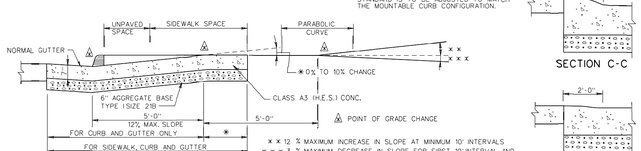
SECTION B-B

⊞ PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.

✱ IF PEDESTRIAN ACCESS ROUTES ⊞ ARE BEING PROVIDED, A MINIMUM 4' TRAVERSABLE WIDTH IS REQUIRED WITH A MAX. 2% CROSS SLOPE.

SECTION C-C

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.



SECTION A-A

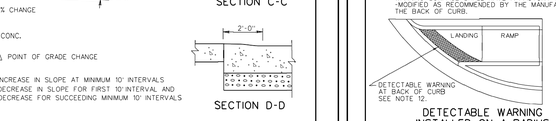
SECTION D-D

VDOT ROAD AND BRIDGE STANDARDS	STANDARD ENTRANCE GUTTER	SPECIFICATION REFERENCE
SHEET 1 OF 1 203.03	REVISION DATE: 01/13	VIRGINIA DEPARTMENT OF TRANSPORTATION	502

CG-12

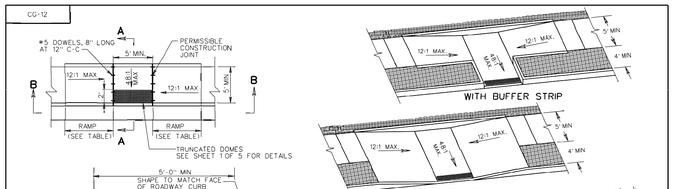
GENERAL NOTES:

1. THE DETECTABLE WARNING SHALL BE PROVIDED BY TRUNCATED DOMES.
2. DETECTABLE WARNING TO BE CLASS A-3 CONCRETE (CLASS A-4 IF PRECAST) WITH SLIP-RESISTANT INTEGRAL SURFACE COVERING THE FULL WIDTH OF THE RAMP FLOOR BY 2 FOOT IN LENGTH IN THE DIRECTION OF PEDESTRIAN TRAVEL. OTHER TYPES OF MATERIAL WITH THE TRUNCATED DOMES DETECTABLE WARNING MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
3. SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
4. IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.
5. REQUIRED BARS ARE TO BE NO. 5 × 8'- PLACED 1' CENTER TO CENTER ALONG BOTH SIDES OF THE RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".
6. CURB / CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB / CURB AND GUTTER.
7. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NONEXISTENT. THEY MUST BE LOCATED WITHIN PEDESTRIAN CROSSWALKS AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.
8. RAMPS MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THAT THE SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
9. TYPICAL CONCRETE SIDEWALK IS 4" THICK. WHEN THE ENTRANCE RADII CANNOT ACCOMMODATE THE TURNING REQUIREMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC, REFER TO STANDARD CG-13, COMMERCIAL ENTRANCE (HEAVY TRUCK TRAFFIC) FOR CONCRETE DEPTH.
10. WHEN CURB RAMPS ARE USED IN CONJUNCTION WITH A SHARED USE PATH, THE MINIMUM WIDTH SHALL BE THE WIDTH OF THE SHARED USE PATH.
11. WHEN ONLY ONE CURB RAMP IS PROVIDED FOR TWO CROSSINGS (DIAGONAL), A 4' x 4' LANDING AREA SHALL BE PROVIDED TO MANEUVER A WHEELCHAIR INTO THE CROSSWALK WITHOUT GOING INTO THE TRAVELWAY. THIS 4' x 4' LANDING AREA MAY INCLUDE THE GUTTER PAN.
12. ALL CASES WHERE CURB RAMPS INTERSECT A RADIAL SECTION OF CURB AT ENTRANCE OR STREET CONNECTIONS, THE DETECTABLE WARNING SURFACE SHALL HAVE A FACTORY RADIUS OR BE FIELD MODIFIED AS RECOMMENDED BY THE MANUFACTURER TO MATCH THE BACK OF CURB.



VDOT ROAD AND BRIDGE STANDARDS	CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES)	SPECIFICATION REFERENCE
SHEET 1 OF 5 203.05	REVISION DATE: 7/11	VIRGINIA DEPARTMENT OF TRANSPORTATION	105 502

CG-12



NOTES: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

TYPE B PARALLEL APPLICATION

ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	6
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15

VDOT ROAD AND BRIDGE STANDARDS	CG-12 DETECTABLE WARNING SURFACE TYPE B (PARALLEL) APPLICATION	SPECIFICATION REFERENCE
SHEET 3 OF 5 203.07	REVISION DATE: 7/11	VIRGINIA DEPARTMENT OF TRANSPORTATION	105 502

ROANOKE

OFFICE OF THE CITY ENGINEER
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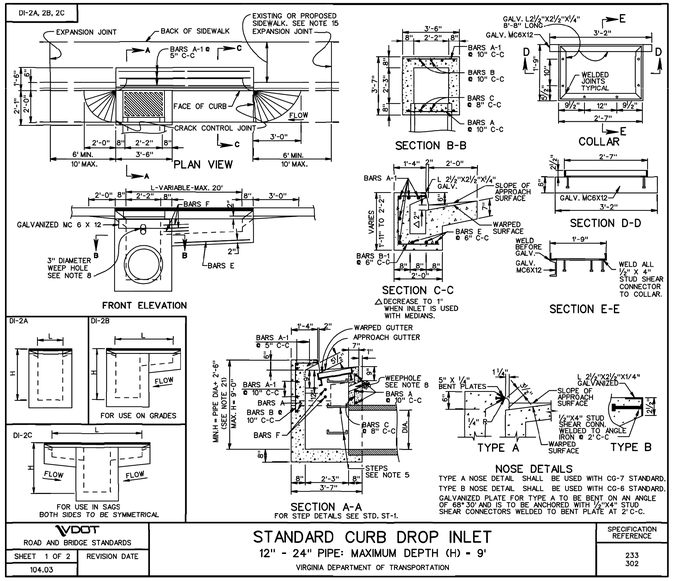
WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL GARDEN CITY BOULEVARD

DETAILS

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	D2
Checked: R.D.P.		

DI-2A, 2B, 2C



VDOT ROAD AND BRIDGE STANDARDS		STANDARD CURB DROP INLET 12" - 24" PIPE: MAXIMUM DEPTH (H) - 9' VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 2	REVISION DATE		233 302
104.03			

DI-2A, 2B, 2C

TABLE OF QUANTITIES

REINFORCING STEEL

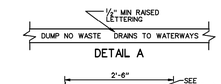
TYPE	L	CONCRETE	BARS A		BARS A-1		BARS B		BARS B-1		BARS C		BARS E		BARS F		WEIGHT
	Ft.	Cu. Yds.	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	Lbs.
DI-2A	2'-2"	1.71	4	3'-2"	5	3'-2"	4	3'-6"	-	-	5	2'-0"	-	-	-	-	55
DI-2B	4'	1.95	4	3'-2"	5	5'-0"	4	3'-6"	3	4'-3" to 4'-6"	5	2'-0"	3	2'-0"	3	1'-6"	84
	6'	2.23	4	3'-2"	5	7'-0"	4	3'-6"	7	4'-3" to 4'-6"	5	2'-0"	3	4'-0"	3	1'-6"	119
	8'	2.51	4	3'-2"	5	9'-0"	4	3'-6"	11	4'-3" to 4'-6"	5	2'-0"	3	6'-0"	3	1'-6"	154
	10'	2.79	4	3'-2"	5	11'-0"	4	3'-6"	15	4'-3" to 4'-6"	5	2'-0"	3	8'-0"	3	1'-6"	189
	12'	3.05	4	3'-2"	5	13'-0"	4	3'-6"	19	4'-3" to 4'-6"	5	2'-0"	3	10'-0"	3	1'-6"	224
	14'	3.34	4	3'-2"	5	15'-0"	4	3'-6"	23	4'-3" to 4'-6"	5	2'-0"	3	12'-0"	3	1'-6"	259
	16'	3.61	4	3'-2"	5	17'-0"	4	3'-6"	27	4'-3" to 4'-6"	5	2'-0"	3	14'-0"	3	1'-6"	294
	18'	3.89	4	3'-2"	5	19'-0"	4	3'-6"	31	4'-3" to 4'-6"	5	2'-0"	3	16'-0"	3	1'-6"	329
	20'	4.17	4	3'-2"	5	21'-0"	4	3'-6"	35	4'-3" to 4'-6"	5	2'-0"	3	18'-0"	3	1'-6"	364
DI-2C	6'	2.24	4	3'-2"	5	7'-0"	4	3'-6"	6	4'-3" to 4'-6"	5	2'-0"	6	2'-1"	6	1'-6"	115
	8'	2.55	4	3'-2"	5	9'-0"	4	3'-6"	10	4'-3" to 4'-6"	5	2'-0"	6	3'-1"	6	1'-6"	150
	10'	2.82	4	3'-2"	5	11'-0"	4	3'-6"	14	4'-3" to 4'-6"	5	2'-0"	6	4'-1"	6	1'-6"	185
	12'	3.09	4	3'-2"	5	13'-0"	4	3'-6"	18	4'-3" to 4'-6"	5	2'-0"	6	5'-1"	6	1'-6"	220
	14'	3.37	4	3'-2"	5	15'-0"	4	3'-6"	22	4'-3" to 4'-6"	5	2'-0"	6	6'-1"	6	1'-6"	255
	16'	3.65	4	3'-2"	5	17'-0"	4	3'-6"	26	4'-3" to 4'-6"	5	2'-0"	6	7'-1"	6	1'-6"	290
	18'	3.93	4	3'-2"	5	19'-0"	4	3'-6"	30	4'-3" to 4'-6"	5	2'-0"	6	8'-1"	6	1'-6"	325
	20'	4.20	4	3'-2"	5	21'-0"	4	3'-6"	34	4'-3" to 4'-6"	5	2'-0"	6	9'-1"	6	1'-6"	360

NOTES

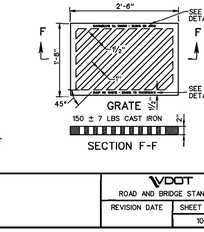
1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.

   THIS ITEM MAY BE PRECAST OR CAST-IN-PLACE.
6. ✱ 4 X 8" SMOOTH DOWELS AT APPROXIMATELY 12" C-C TO BE PLACED IN ALL AREAS ADJACENT
7. TO ABUTTING CONCRETE TO PREVENT SETTLEMENT.

   3" DIAMETER WEEP HOLE TO BE LOCATED TO
8. DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ½" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2".
10. ALL REINFORCING STEEL TO BE CUT CLEAR OF ALL OPENINGS BY 2".
11. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. LENGTH OF SLOT (L) WILL, IN EVERY CASE, BE SHOWN ON PLANS.
13. THIS STANDARD IS INTENDED FOR USE IN CURB AND GUTTER SITUATIONS ONLY.
14. STANDARD INLETS MAY BE CONSTRUCTED WITH CONCRETE BLOCKS IN ACCORDANCE WITH THE DETAILS SHOWN ON STANDARD DRAWING DI-MB.
15. THIS AREA MAY BE EARTHEN, IN WHICH CASE THE EXPANSION JOINTS WILL APPLY ONLY TO CURB AND GUTTER.
16. CONCRETE QUANTITIES SHOWN ARE FOR DEPTH (H) OF 5'-2" WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES. FOR INLETS OF DIFFERENT DEPTHS ADD OR SUBTRACT 0.32 CUBIC YARDS OF CONCRETE FOR EACH FOOT OF DEPTH.
17. LENGTH OF ANGLE IRON AS SHOWN ON SHEET 1 OF 2 IS TO BE L +16" AT 4.10 LBS./FT..
18. ✱ DENOTES LENGTH OF ONE (1) BAR.
19. ALL REINFORCING BARS TO BE #5.
20. GRATE TO BE INSTALLED SO SLOTS WILL DIRECT WATER TOWARD THE INLET THROAT.
21. MINIMUM HEIGHT = PIPE DIA.+ 2'-6" WHEN PIPES ARE LOCATED UNDER EXTENDED SLOT OF INLET.
22. DUMP NO WASTE DRAINS TO WATERWAYS LETTERING IS REQUIRED ON ALL DI-2 GRATES. LOCATION OF LETTERING MAY VARY BY MANUFACTURER.

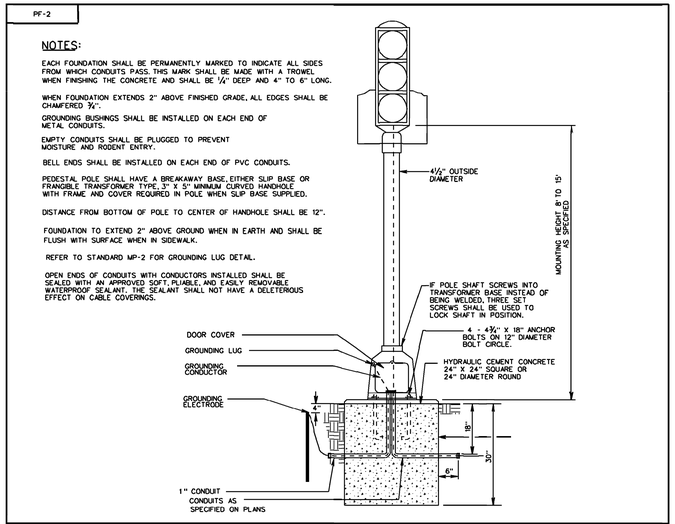


DETAIL A



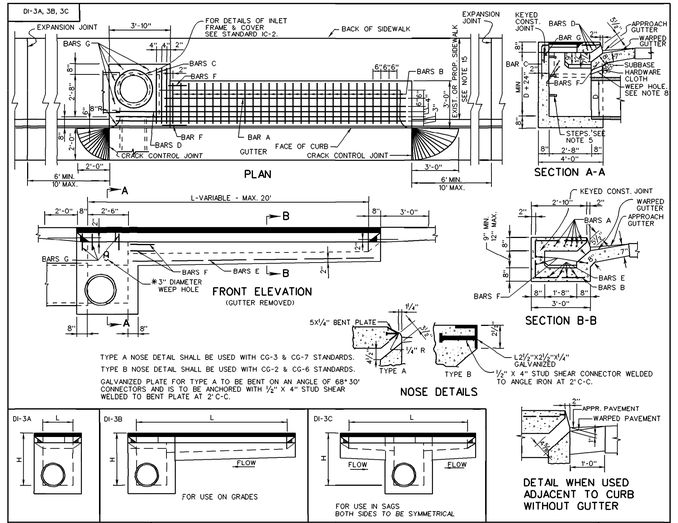
SPECIFICATION REFERENCE	STANDARD CURB DROP INLET 12" - 24" PIPE: MAXIMUM DEPTH (H)-9' VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
233 302		REVISION DATE: SHEET 2 OF 2 104.04

PF-2



VDOT ROAD AND BRIDGE STANDARDS		PEDESTAL POLE AND FOUNDATION DETAILS VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 1	REVISION DATE		700
1302.30	06-15-2009		

DI-3A, 3B, 3C



VDOT ROAD AND BRIDGE STANDARDS		STANDARD CURB DROP INLET 12" - 30" PIPE: MAXIMUM DEPTH (H) - 8' VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 2	REVISION DATE		233 302
104.09	08/10		

DI-3A, 3B, 3C

TABLE OF QUANTITIES

REINFORCING STEEL

TYPE	L	AREA OF SLOT	Concrete	BARS A		BARS B		BARS C		BARS D		BARS E		BARS F		BARS G		WEIGHT
	Ft.	Sq. Ft.	Cu. Yds.	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft. ✱	No.	Lin. Ft.✱	No.	Lin. Ft.✱	No.	Lin. Ft.✱	No.	Lin. Ft.✱	Lbs.
DI-3A	2'-6"	1.15	2.26	-	-	-	-	1	5'-7"	3	3'-2"	-	-	-	-	6	1'-0"	22
DI-3B	4'	1.83	2.59	5	1'-6"	2	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	1'-6"	3	1'-6"	4	1'-0"	64
	6'	2.75	3.02	5	3'-6"	6	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	3'-6"	3	1'-6"	4	1'-0"	111
	8'	3.67	3.45	5	5'-6"	10	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	5'-6"	3	1'-6"	4	1'-0"	158
	10'	4.58	3.90	5	7'-6"	14	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	7'-6"	3	1'-6"	4	1'-0"	204
	12'	5.50	4.34	5	9'-6"	18	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	9'-6"	3	1'-6"	4	1'-0"	251
	14'	6.42	4.78	5	11'-6"	22	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	11'-6"	3	1'-6"	4	1'-0"	298
	16'	7.33	5.22	5	13'-6"	26	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	13'-6"	3	1'-6"	4	1'-0"	345
	18'	8.25	5.66	5	15'-6"	30	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	15'-6"	3	1'-6"	4	1'-0"	391
	20'	9.17	6.09	5	17'-6"	34	6'-7" to 6'-10"	3	5'-7"	3	3'-2"	4	17'-6"	3	1'-6"	4	1'-0"	438
DI-3C	6'	2.75	3.01	10	1'-9"	4	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	1'-9"	6	1'-6"	2	1'-0"	111
	8'	3.67	3.45	10	2'-9"	8	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	2'-9"	6	1'-6"	2	1'-0"	158
	10'	4.58	3.89	10	3'-9"	12	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	3'-9"	6	1'-6"	2	1'-0"	205
	12'	5.50	4.33	10	4'-9"	16	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	4'-9"	6	1'-6"	2	1'-0"	252
	14'	6.42	4.77	10	5'-9"	20	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	5'-9"	6	1'-6"	2	1'-0"	298
	16'	7.33	5.21	10	6'-9"	24	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	6'-9"	6	1'-6"	2	1'-0"	345
	18'	8.25	5.65	10	7'-9"	28	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	7'-9"	6	1'-6"	2	1'-0"	392
	20'	9.17	6.09	10	8'-9"	32	6'-7" to 6'-10"	5	5'-7"	3	3'-2"	8	8'-9"	6	1'-6"	2	1'-0"	439

NOTES

1. DEPTH OF INLET (H) TO BE SHOWN ON PLANS.
2. THE "H" DIMENSION SHOWN ON THE STANDARDS AND SPECIFIED ON THE PLANS WILL BE MEASURED FROM THE INVERT OF THE OUTFALL PIPE TO THE TOP OF THE STRUCTURE. PLAN "H" DIMENSIONS ARE APPROXIMATE ONLY FOR ESTIMATING PURPOSES AND THE ACTUAL DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FROM FIELD CONDITIONS.
3. WHEN SPECIFIED ON THE PLANS THE INVERT IS TO BE SHAPED IN ACCORDANCE WITH STANDARD IS-1. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
4. IN THE EVENT THE INVERT OF THE OUTFALL PIPE IS HIGHER THAN THE BOTTOM OF THE STRUCTURE, THE INVERT OF THE STRUCTURE SHALL BE SHAPED WITH CEMENT MORTAR TO PREVENT STANDING OR PONDING OF WATER IN THE STRUCTURE. THE COST OF FURNISHING AND PLACING ALL MATERIALS INCIDENTAL TO THE SHAPING IS TO BE INCLUDED IN THE BID PRICE FOR THE STRUCTURE.
5. STEPS ARE TO BE PROVIDED WHEN H IS 4'-0" OR GREATER. FOR DETAILS SEE STANDARD ST-1.
6. THIS ITEM MAY BE PRECAST OR CAST-IN-PLACE.
7. ✱4 X 8" SMOOTH DOWELS AT APPROXIMATELY 12" C-C TO BE PLACED IN ALL AREAS ADJACENT TO ABUTTING CONCRETE TO PREVENT SETTLEMENT.
8. 3" DIAMETER WEEP HOLE TO BE LOCATED TO DRAIN SUBBASE MATERIAL. WEEP HOLE WITH 12"X12" PLASTIC HARDWARE CLOTH ½" MESH OR GALVANIZED STEEL WIRE, MINIMUM WIRE DIAMETER 0.03", NUMBER 4 MESH HARDWARE CLOTH ANCHORED FIRMLY TO THE OUTSIDE OF THE STRUCTURE.
9. ALL REINFORCING STEEL SHALL HAVE A MIN. COVER OF 2".
10. ALL REINFORCING STEEL TO BE CUT CLEAR OF ALL OPENINGS BY 2".
11. CAST-IN PLACE CONCRETE IS TO BE CLASS A3 (3000 PSI). PRECAST CONCRETE IS TO BE 4000 PSI.
12. LENGTH OF SLOT (L) WILL, IN EVERY CASE, BE SHOWN ON PLANS.
13. IF INLET IS CONSTRUCTED IN MEDIAN CURB OR WITH INTEGRAL CURB, GUTTER IS TO BE OMITTED (SEE DETAIL).
14. STANDARD INLETS MAY BE CONSTRUCTED WITH CONCRETE BLOCKS IN ACCORDANCE WITH THE DETAILS SHOWN ON STANDARD DRAWING DI-MB.
15. THIS AREA MAY BE EARTHEN, IN WHICH CASE THE EXPANSION JOINTS WILL APPLY ONLY TO CURB AND GUTTER.
16. CONCRETE QUANTITIES SHOWN ARE FOR DEPTH (H) OF 5'-2" WITHOUT PIPES. THE AMOUNT DISPLACED BY PIPES MUST BE DEDUCTED TO OBTAIN TRUE QUANTITIES. FOR INLETS OF DIFFERENT DEPTHS ADD OR SUBTRACT 0.32 CUBIC YARDS OF CONCRETE FOR EACH FOOT OF DEPTH.
17. LENGTH OF ANGLE IRON AS SHOWN ON SHEET 1 OF 2 IS TO BE L +16" AT 4.10 LBS./FT..
18. ✱ DENOTES LENGTH OF ONE (1) BAR.
19. ALL REINFORCING BARS TO BE ✱5.
20. WHEN INLET IS USED IN 4'-0" MEDIAN, BACK OF INLET IS TO BE SHAPED TO CONFORM TO PROPOSED CURB.

SPECIFICATION REFERENCE	STANDARD CURB DROP INLET 12" - 30" PIPE: MAXIMUM DEPTH (H) - 8' VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS
233 302		REVISION DATE: SHEET 2 OF 2 104.10

ROANOKE

OFFICE OF THE CITY ENGINEER
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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

DETAILS

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	D3
Checked: R.D.P.		

1). Project Category (Minimum TMP Requirements)

A). This will be a Type A project.

B). The length of the work zone will be 3350 feet.
The width of the work area will vary.

C). The traffic in this area consists primarily of local traffic, school traffic and through traffic.

D). Lanes in both directions will be affected by the project.

2). Temporary Traffic Control (TTC) Plan: (Component 1)

A). Major components will consist of General Notes and special details.

B). Specific traffic control figures and notes from the 2011 W.A.P.M. used for Traffic Control are:

TTC-23.0 Page 6H-52, 6H-53
TTC-28.0 Page 6H-62, 6H-63
TTC-53.0 Page 6H-112, 6H-113

3). Public Communication Strategies: (Component 2)

Project Description:

* Reducing lane widths and constructing curb and gutter and sidewalk.

Traffic Impacts:

* Temporary lane closures with flagging operations.

Goals:

* To inform the public about the project
* To minimize disruption through proactive information dissemination efforts
* To gather public support for the project
* To establish a crisis communications plan

Messages:

* Benefits and purpose of the project
* Traffic Impacts and information on alternate routes
* Contacts for more information

Crisis Communications Plan:

* As with any crisis, emergency responders (911) should be notified immediately if necessary.
* Ms. Priscilla Cyglenik or her designee should be notified immediately.
* If the emergency is traffic related, the Roanoke City Transportation Division should be notified immediately at 540-853-2676.

4). Transportation Operations (TO) Plan

A.) This plan is not required on this project.

Target Audience	Contact Method	Phone Number, E-mail or Address	Responsible Charge
MOTORISTS	News Release		Engineering Division
POLICE, EMS	Phone	Roanoke Police Dept. 540-853-2211 Roanoke Fire-EMS Dept. 540-853-2327 Fire Marshall's Office. 540-853-2795 Emergency Management 540-853-2426	Engineering Division
COUNTY/CITY OFFICIALS			Engineering Division
BUSINESSES	News Release		Engineering Division
SCHOOLS	Phone	Garden City Elementary 540-853-2971	Engineering Division

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

ROADWAY ENGINEER

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WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

TRANSPORTATION MANAGEMENT PLAN

Designed: A.J.K.
Drawn: R.D.W.
Checked: R.D.P.

DATE: FEB 2015

SHEET NUMBER: T1

MAINTENANCE OF TRAFFIC PLAN GENERAL NOTES

UNLESS OTHERWISE APPROVED OR DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PLAN AND PROSECUTE THE WORK IN ACCORDANCE WITH THE TEMPORARY TRAFFIC CONTROL PLANS.

TRAFFIC CONTROL DEVICES AND SAFETY MEASURES SHALL COMPLY WITH THE:

2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

2011 VIRGINIA WORK AREA PROTECTION MANUAL (VWAPM)

2011 VIRGINIA SUPPLEMENT TO THE MUTCD

THE TRAFFIC CONTROL FEATURES SHOWN HERE DEPICT THE MAJOR TRAFFIC CONTROL ITEMS. DAILY CONTROL OF TRAFFIC INCLUDING THE PLACEMENT, MAINTENANCE AND REMOVAL OF TRAFFIC CONTROL DEVICES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

THE LOCATION OF TRAFFIC CONTROL DEVICES SHOWN IS SCHEMATIC. IN PARTICULAR, SHADOW VEHICLE LOCATIONS SHOWN INDICATE THE APPROXIMATE LOCATION OF A SHADOW VEHICLE IF THE WORK CREW IS LOCATED AT THE BEGINNING OF THE WORK ZONE. THE ACTUAL LOCATION OF THE SHADOW VEHICLE OR VEHICLES WILL BE DEPENDENT ON THE LOCATION OF THE WORK CREW OR CREWS PER THE VWAPM.

IT IS NOT THE INTENT OF THESE PLANS TO ENUMERATE EVERY DETAIL WHICH MUST BE CONSIDERED IN CONSTRUCTION, BUT ONLY TO SHOW THE GENERAL HANDLING OF TRAFFIC. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION FOR MAINTENANCE OF TRAFFIC PLANS OTHER THAN THE APPROVED MAINTENANCE OF TRAFFIC PLANS.

ANY MAINTENANCE OF TRAFFIC PLANS SUBMITTED BY THE CONTRACTOR THAT DIFFER FROM THE APPROVED MAINTENANCE OF TRAFFIC PLANS MUST BE SUBMITTED WITH THE SAME LEVEL OF DETAIL AS THE APPROVED MAINTENANCE OF TRAFFIC PLANS.

THE CLEAR ZONE SHALL BE MAINTAINED FREE OF PARKED EQUIPMENT AND STORED MATERIALS OR OTHERWISE PROTECTED IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL.

ALL SIGNS, CHANNELIZING DEVICES, AND ANY OTHER DEVICES USED IN THE CONSTRUCTION ZONE SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL BE KEPT CLEAN AND PROPERLY ALIGNED AT ALL TIMES.

WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.

ALL AREAS EXCAVATED BELOW EXISTING PAVEMENT SURFACE AND WITHIN THE CLEAR ZONE AT THE CONCLUSION OF EACH WORKDAY, SHALL BE PROTECTED IN ACCORDANCE WITH VWAPM APPENDIX A FOR THE SAFETY AND PROTECTION OF VEHICULAR TRAFFIC.

APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION.

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESS AT ALL TIMES.

CONTRACTOR SHALL COMPLETELY ERADICATE ALL CONFLICTING PAVEMENT MARKINGS ALONG GARDEN CITY BLVD. CONTRACTOR SHALL COMPLETELY COVER CONFLICTING PAVEMENT MARKINGS ALONG SIDE STREETS WITH TYPE E MARKINGS (BLACK REMOVABLE TAPE) UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONTRACTOR SHALL NOTE THE POSSIBLE PRESENCE OF EXISTING UTILITIES ADJACENT TO EXISTING ROADWAYS. CONTRACTOR SHALL CONFIRM POST MOUNTING OF CONSTRUCTION SIGNS DO NOT CONFLICT WITH EXISTING UTILITIES.

THE CONTRACTOR SHALL TEMPORARILY COVER ANY EXISTING SIGNS THAT ARE CONTRARY TO CONSTRUCTION SIGNS AND UNCOVER THEM WHEN THEY ARE NO LONGER CONTRARY TO CONSTRUCTION SIGNS OR AT THE COMPLETION OF THE PROJECT AS DIRECTED BY THE ENGINEER.

ADDITIONAL SIGNS AND BARRICADES MAY BE REQUIRED BY THE ENGINEER.

WORK PERFORMED UTILIZING FLAGGING OPERATIONS SHALL OCCUR BETWEEN THE HOURS OF 9 A.M. AND 4 P.M. FLAGGING OPERATIONS SHALL BE IN ACCORDANCE WITH VWAPM TTC-23.0 OR TTC-28.0 AS SPECIFIED IN THE PLAN.

MAINTENANCE OF TRAFFIC PLAN SEQUENCE OF CONSTRUCTION

STAGE 1: ERADICATE ALL CONFLICTING PAVEMENT MARKINGS AND INSTALL DOUBLE YELLOW LINE MARKINGS IN ACCORDANCE WITH VWAPM.

INSTALL ADVANCE WARNING SIGNS ALONG GARDEN CITY BOULEVARD AND OTHER SIDE STREETS.

SET UP FLAGGING OPERATION IN ACCORDANCE WITH VWAPM TTC-23.0 AND TTC-28.0 AS SHOWN ON THE PLAN.

CONSTRUCT IMPROVEMENTS ALONG GARDEN CITY BLVD. FROM STATION 23+75 TO MABRY AVENUE.

GARDEN CITY BLVD. AND ALL SIDE STREETS SHALL BE OPENED TO TWO-WAY TWO-LANE TRAFFIC AT THE END OF EACH WORKDAY.

STAGE 2: REMOVE ALL TEMPORARY PAVEMENT MARKINGS AND PLACE FINAL PAVEMENT MARKINGS IN ACCORDANCE WITH VWAPM.

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

ROADWAY ENGINEER

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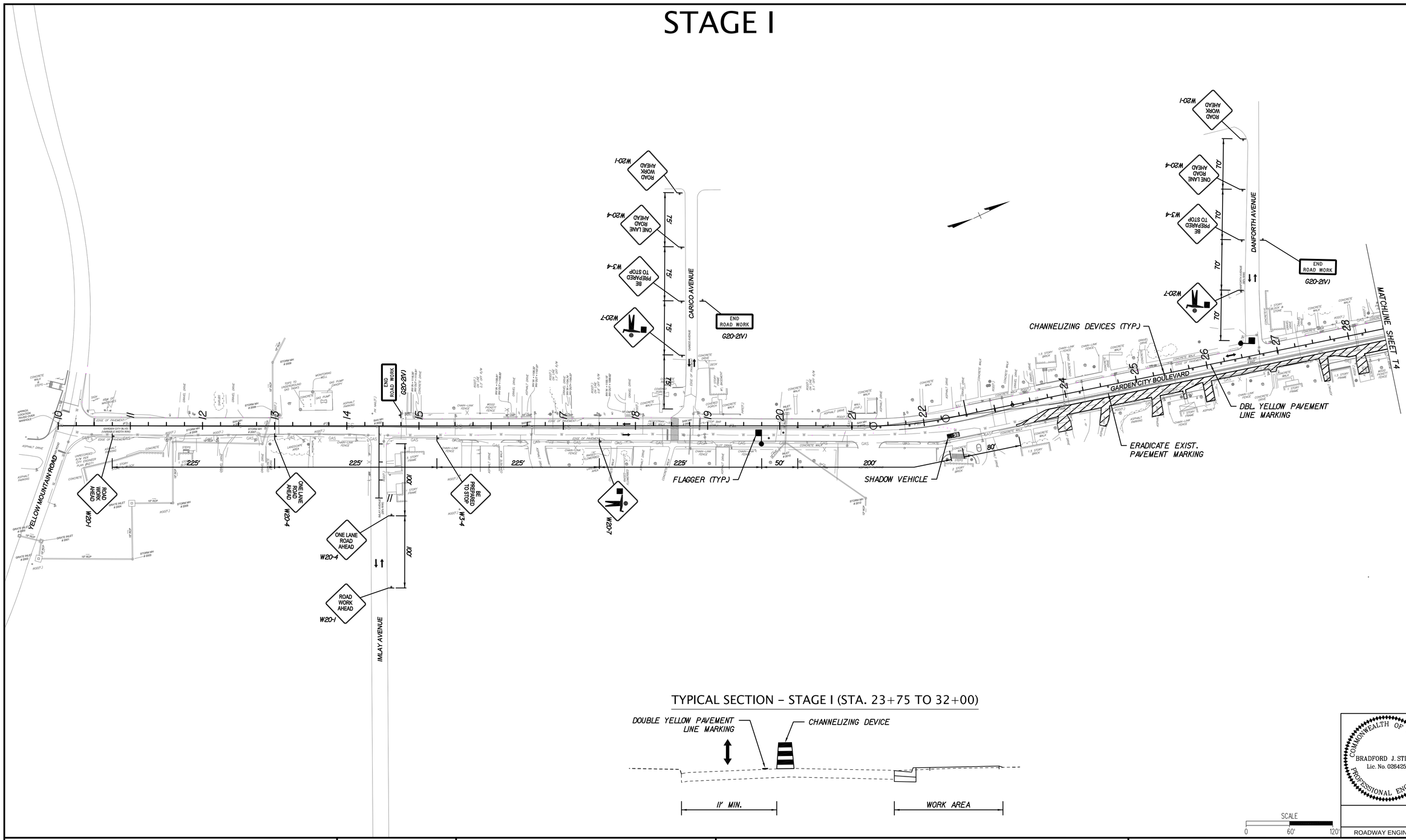
WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T2
Checked: R.D.P.		

STAGE I



TYPICAL SECTION – STAGE I (STA. 23+75 TO 32+00)

SCALE
0 60' 120'

COMMONWEALTH OF VIRGINIA
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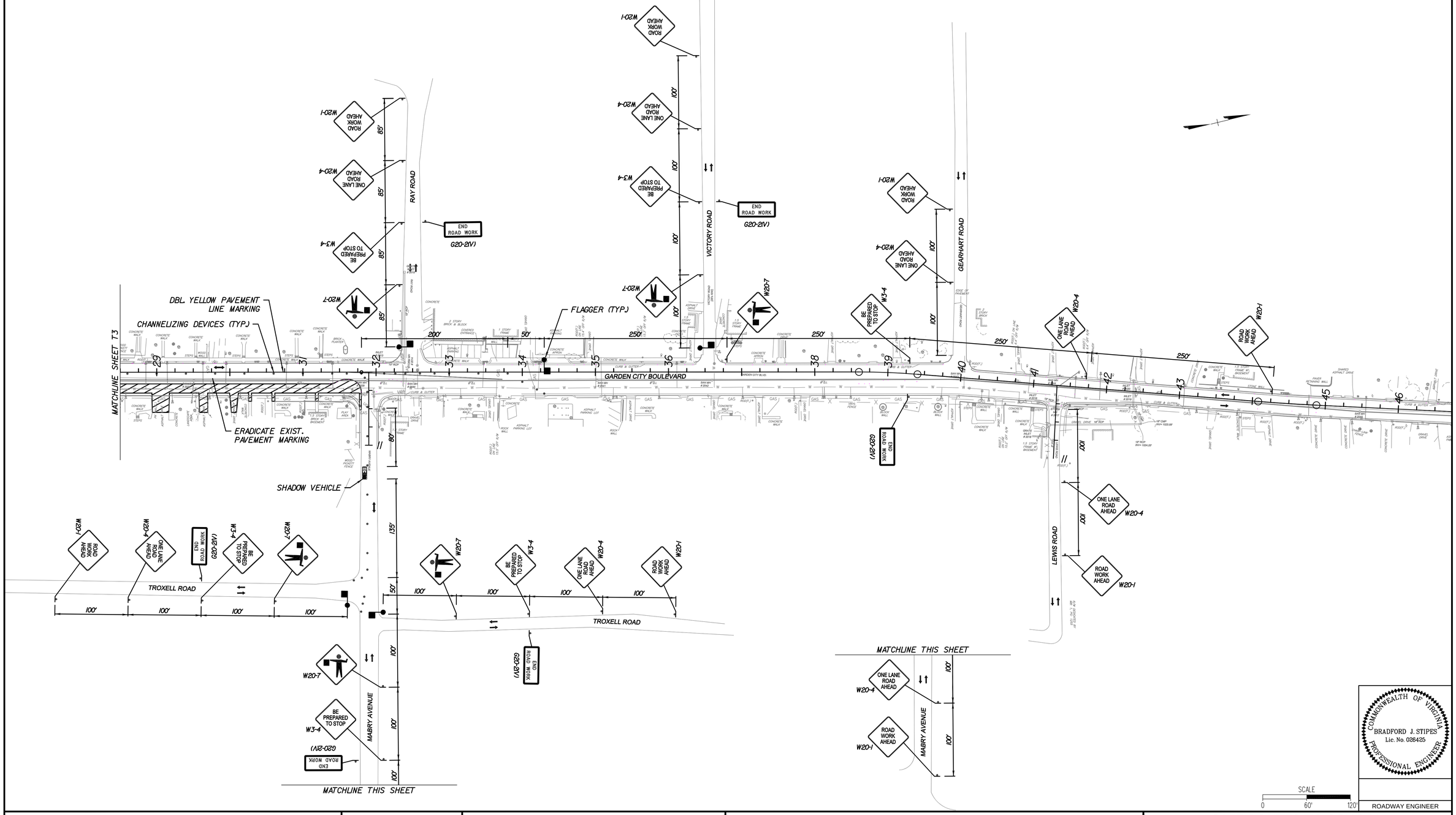
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T3
Checked: R.D.P.		

STAGE I



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SCALE 0 60' 120'

ROADWAY ENGINEER

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	T4
Checked:	R.D.P.		

PAVEMENT MARKING LEGEND

A. TYPE A, DOUBLE YELLOW PAVEMENT LINE MARKING, 4" WIDTH (4" SPACE)
B. TYPE A, WHITE PAVEMENT LINE MARKING, 4" WIDTH
C. TYPE A, WHITE PAVEMENT LINE MARKING, 8" WIDTH
D. TYPE A, WHITE PAVEMENT LINE MARKING, 24" WIDTH

NOTE: FOLLOWING THE INSTALLATION OF PROPOSED CURB AND GUTTER, CONTRACTOR SHALL COORDINATE WITH CITY ENGINEER TO COORDINATE PAVEMENT MARKINGS TO BE INSTALLED BY CITY FORCES.

COMMONWEALTH OF VIRGINIA
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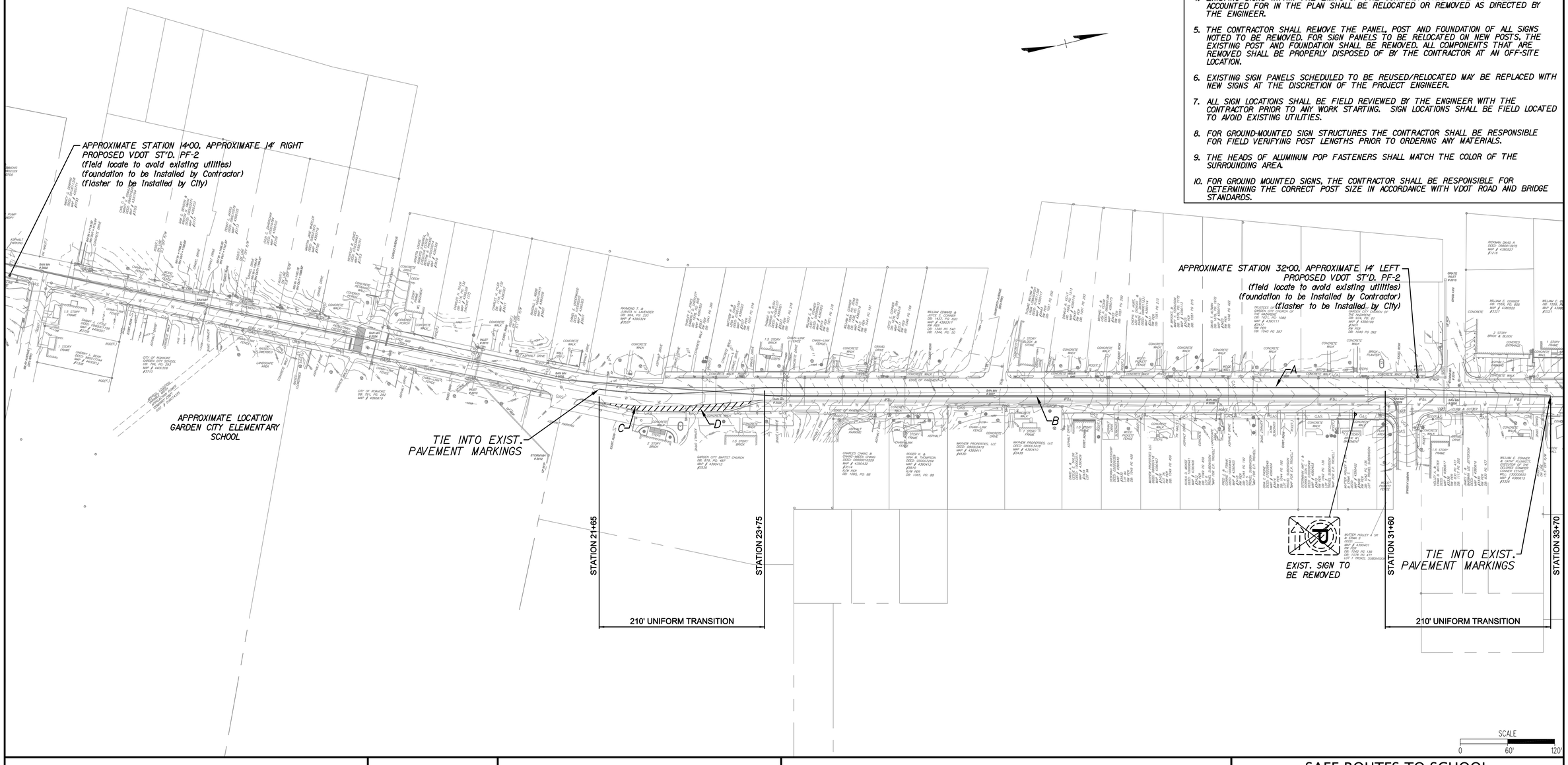
ROADWAY ENGINEER

GENERAL NOTES - SIGNING & PAVEMENT MARKINGS

1. ALL PROPOSED SIGNING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH EACH OF THE FOLLOWING MANUALS, OR THE MOST RECENT REVISION THERETO:
   A. 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
   B. 2011 VIRGINIA SUPPLEMENT TO THE MUTCD.
   C. 2007 VDOT ROAD AND BRIDGE SPECIFICATIONS.
   D. 2008 VDOT ROAD AND BRIDGE STANDARDS.
2. ANY EXISTING PAVEMENT MARKINGS THAT WILL CONFLICT WITH PROPOSED PAVEMENT MARKINGS SHALL BE COMPLETELY ERADICATED.
3. LIMITS SHOWN OF PROPOSED MARKINGS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO ENSURE THAT PROPOSED PAVEMENT MARKINGS CONTINUE UNTIL EXISTING PAVEMENT MARKING CAN BE MATCHED.
4. EXISTING SIGNS WITHIN THE LIMITS OF THE CONTRACT THAT HAVE NOT BEEN ACCOUNTED FOR IN THE PLAN SHALL BE RELOCATED OR REMOVED AS DIRECTED BY THE ENGINEER.
5. THE CONTRACTOR SHALL REMOVE THE PANEL, POST AND FOUNDATION OF ALL SIGNS NOTED TO BE REMOVED. FOR SIGN PANELS TO BE RELOCATED ON NEW POSTS, THE EXISTING POST AND FOUNDATION SHALL BE REMOVED. ALL COMPONENTS THAT ARE REMOVED SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR AT AN OFF-SITE LOCATION.
6. EXISTING SIGN PANELS SCHEDULED TO BE REUSED/RELOCATED MAY BE REPLACED WITH NEW SIGNS AT THE DISCRETION OF THE PROJECT ENGINEER.
7. ALL SIGN LOCATIONS SHALL BE FIELD REVIEWED BY THE ENGINEER WITH THE CONTRACTOR PRIOR TO ANY WORK STARTING. SIGN LOCATIONS SHALL BE FIELD LOCATED TO AVOID EXISTING UTILITIES.
8. FOR GROUND-MOUNTED SIGN STRUCTURES THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING POST LENGTHS PRIOR TO ORDERING ANY MATERIALS.
9. THE HEADS OF ALUMINUM POP FASTENERS SHALL MATCH THE COLOR OF THE SURROUNDING AREA.
10. FOR GROUND MOUNTED SIGNS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE CORRECT POST SIZE IN ACCORDANCE WITH VDOT ROAD AND BRIDGE STANDARDS.



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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

SIGNING AND PAVEMENT MARKING PLAN

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	T5
Checked:	R.D.P.		

1). Project Category (Minimum TMP Requirements)

A). This will be a Type A project.

B). The length of the work zone will be 3350 feet.
The width of the work area will vary.

C). The traffic in this area consists primarily of local traffic, school traffic and through traffic.

D). Lanes in both directions will be affected by the project.

2). Temporary Traffic Control (TTC) Plan: (Component 1)

A). Major components will consist of General Notes and special details.

B). Specific traffic control figures and notes from the 2011 W.A.P.M. used for Traffic Control are:

TTC-23.0 Page 6H-52, 6H-53
TTC-28.0 Page 6H-62, 6H-63
TTC-35.0 Page 6H-76, 6H-77
TTC-53.0 Page 6H-112, 6H-113

3). Public Communication Strategies: (Component 2)

Project Description:

- Reducing lane widths and constructing curb and gutter and sidewalk.

Traffic Impacts:

- Temporary lane closures with flagging operations.

Goals:

- To inform the public about the project
- To minimize disruption through proactive information dissemination efforts
- To gather public support for the project
- To establish a crisis communications plan

Messages:

- Benefits and purpose of the project
- Traffic impacts and information on alternate routes
- Contacts for more information

Crisis Communications Plan:

- As with any crisis, emergency responders (911) should be notified immediately if necessary.
- Ms. Priscilla Cygielnik or her designee should be notified immediately.
- If the emergency is traffic related, the Roanoke City Transportation Division should be notified immediately at 540-853-2676.

4). Transportation Operations (TO) Plan

A.) This plan is not required on this project.

Target Audience	Contact Method	Phone Number, E-mail or Address	Responsible Charge
MOTORISTS	News Release		Engineering Division
POLICE, EMS	Phone	Roanoke Police Dept. 540-853-2211 Roanoke Fire-EMS Dept. 540-853-2327 Fire Marshall's Office. 540-853-2795 Emergency Management 540-853-2426	Engineering Division
COUNTY/CITY OFFICIALS			Engineering Division
BUSINESSES	News Release		Engineering Division
SCHOOLS	Phone	Garden City Elementary 540-853-2971	Engineering Division

COMMONWEALTH OF VIRGINIA
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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

TRANSPORTATION MANAGEMENT PLAN

Designed: AJK
Drawn: AJK
Checked:

DATE: FEB 2015

SHEET NUMBER: T6

MAINTENANCE OF TRAFFIC PLAN GENERAL NOTES

UNLESS OTHERWISE APPROVED OR DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL PLAN AND PROSECUTE THE WORK IN ACCORDANCE WITH THE TEMPORARY TRAFFIC CONTROL PLANS.

TRAFFIC CONTROL DEVICES AND SAFETY MEASURES SHALL COMPLY WITH THE:

2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

2011 VIRGINIA WORK AREA PROTECTION MANUAL (VWAPM)

2011 VIRGINIA SUPPLEMENT TO THE MUTCD

THE TRAFFIC CONTROL FEATURES SHOWN HERE DEPICT THE MAJOR TRAFFIC CONTROL ITEMS. DAILY CONTROL OF TRAFFIC INCLUDING THE PLACEMENT, MAINTENANCE AND REMOVAL OF TRAFFIC CONTROL DEVICES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

THE LOCATION OF TRAFFIC CONTROL DEVICES SHOWN IS SCHEMATIC. IN PARTICULAR, SHADOW VEHICLE LOCATIONS SHOWN INDICATE THE APPROXIMATE LOCATION OF A SHADOW VEHICLE IF THE WORK CREW IS LOCATED AT THE BEGINNING OF THE WORK ZONE. THE ACTUAL LOCATION OF THE SHADOW VEHICLE OR VEHICLES WILL BE DEPENDENT ON THE LOCATION OF THE WORK CREW OR CREWS PER THE VWAPM.

IT IS NOT THE INTENT OF THESE PLANS TO ENUMERATE EVERY DETAIL WHICH MUST BE CONSIDERED IN CONSTRUCTION, BUT ONLY TO SHOW THE GENERAL HANDLING OF TRAFFIC. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION FOR MAINTENANCE OF TRAFFIC PLANS OTHER THAN THE APPROVED MAINTENANCE OF TRAFFIC PLANS.

ANY MAINTENANCE OF TRAFFIC PLANS SUBMITTED BY THE CONTRACTOR THAT DIFFER FROM THE APPROVED MAINTENANCE OF TRAFFIC PLANS MUST BE SUBMITTED WITH THE SAME LEVEL OF DETAIL AS THE APPROVED MAINTENANCE OF TRAFFIC PLANS.

THE CLEAR ZONE SHALL BE MAINTAINED FREE OF PARKED EQUIPMENT AND STORED MATERIALS OR OTHERWISE PROTECTED IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL.

ALL SIGNS, CHANNELIZING DEVICES, AND ANY OTHER DEVICES USED IN THE CONSTRUCTION ZONE SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL BE KEPT CLEAN AND PROPERLY ALIGNED AT ALL TIMES.

THE CONTRACTOR SHALL ENSURE THAT TRAFFIC CONTROL DEVICES DO NOT IMPAIR ADEQUATE SIGHT DISTANCE.

WORK IS TO BE PERFORMED PER THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.

ALL AREAS EXCAVATED BELOW EXISTING PAVEMENT SURFACE AND WITHIN THE CLEAR ZONE AT THE CONCLUSION OF EACH WORKDAY, SHALL BE PROTECTED IN ACCORDANCE WITH VWAPM APPENDIX A FOR THE SAFETY AND PROTECTION OF VEHICULAR TRAFFIC.

APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION.

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESS AT ALL TIMES.

CONTRACTOR SHALL COMPLETELY ERADICATE ALL CONFLICTING PAVEMENT MARKINGS ALONG GARDEN CITY BLVD. CONTRACTOR SHALL COMPLETELY COVER CONFLICTING PAVEMENT MARKINGS ALONG SIDE STREETS WITH TYPE E MARKINGS (BLACK REMOVABLE TAPE) UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TEMPORARY CONSTRUCTION PAVEMENT MARKINGS SHALL BE TYPE F CLASS II UNLESS OTHERWISE INDICATED OR DIRECTED BY THE ENGINEER.

TYPICAL CHANNELIZING DEVICE SPACING FOR THIS PROJECT: 40' IN TANGENT SECTIONS, 20' IN TAPERS AND CURVES. IN INTERSECTION AREAS TIGHTER SPACING MAY BE REQUIRED TO CLEARLY INDICATE THE DESIRED PATH FOR MOTORISTS.

CONTRACTOR SHALL NOTE THE POSSIBLE PRESENCE OF EXISTING UTILITIES ADJACENT TO EXISTING ROADWAYS. CONTRACTOR SHALL CONFIRM POST MOUNTING OF CONSTRUCTION SIGNS DO NOT CONFLICT WITH EXISTING UTILITIES.

THE CONTRACTOR SHALL TEMPORARILY COVER ANY EXISTING SIGNS THAT ARE CONTRARY TO CONSTRUCTION SIGNS AND UNCOVER THEM WHEN THEY ARE NO LONGER CONTRARY TO CONSTRUCTION SIGNS OR AT THE COMPLETION OF THE PROJECT AS DIRECTED BY THE ENGINEER.

ADDITIONAL SIGNS AND BARRICADES MAY BE REQUIRED BY THE ENGINEER.

WORK PERFORMED UTILIZING FLAGGING OPERATIONS SHALL OCCUR BETWEEN THE HOURS OF 9 A.M. AND 4 P.M., EXCEPT WORK REQUIRING A LANE CLOSURE BETWEEN IMLAY AVE. AND MABRY AVE. SHALL OCCUR BETWEEN THE HOURS OF 9 A.M. AND 2 P.M. SO AS TO MINIMIZE DISRUPTION TO SCHOOL BUS TRAFFIC. FLAGGING OPERATIONS SHALL BE IN ACCORDANCE WITH VWAPM TTC-23.0 OR TTC-28.0 AS SPECIFIED IN THE PLAN.

MAINTENANCE OF TRAFFIC PLAN SEQUENCE OF CONSTRUCTION

NOTE: THE STAGES OF CONSTRUCTION MAY BE REORDERED AT THE DISCRETION OF THE CITY TO ACCOMMODATE THE SCHOOL SCHEDULE OR FOR OTHER REASONS.

STAGE 1: ERADICATE ALL CONFLICTING PAVEMENT MARKINGS AND INSTALL DOUBLE YELLOW LINE MARKINGS; PROVIDE TRAFFIC CONTROL FOR THESE OPERATIONS IN ACCORDANCE WITH VWAPM.

INSTALL ADVANCE WARNING SIGNS ALONG GARDEN CITY BOULEVARD AND OTHER SIDE STREETS.

SET UP FLAGGING OPERATION IN ACCORDANCE WITH VWAPM TTC-23.0 AND TTC-28.0 AS SHOWN ON THE PLAN.

CONSTRUCT IMPROVEMENTS ALONG GARDEN CITY BLVD. FROM MABRY AVENUE TO IVYWOOD STREET.

GARDEN CITY BLVD. AND ALL SIDE STREETS SHALL BE OPENED TO TWO-WAY TWO-LANE TRAFFIC AT THE END OF EACH WORKDAY.

STAGE 2: ERADICATE ALL CONFLICTING PAVEMENT MARKINGS AND INSTALL DOUBLE YELLOW LINE MARKINGS; PROVIDE TRAFFIC CONTROL FOR THESE OPERATIONS IN ACCORDANCE WITH VWAPM.

INSTALL ADVANCE WARNING SIGNS ALONG GARDEN CITY BOULEVARD AND OTHER SIDE STREETS.

SET UP FLAGGING OPERATION IN ACCORDANCE WITH VWAPM TTC-23.0 AND TTC-28.0 AS SHOWN ON THE PLAN.

CONSTRUCT IMPROVEMENTS ALONG GARDEN CITY BLVD. FROM IMLAY AVENUE TO APPROX. STA. 23+75.

MAINTAIN PEDESTRIAN TRAFFIC IN AREA OF EXISTING SIDEWALK AS SHOWN ON SHEET T6. PROVIDE ADDITIONAL TRAFFIC CONTROL DEVICES AS NECESSARY TO DIRECT PEDESTRIAN TRAFFIC TO INTENDED AREA.

GARDEN CITY BLVD. AND ALL SIDE STREETS SHALL BE OPENED TO TWO-WAY TWO-LANE TRAFFIC AT THE END OF EACH WORKDAY.

STAGE 3: ERADICATE ALL CONFLICTING PAVEMENT MARKINGS AND INSTALL DOUBLE YELLOW LINE MARKINGS; PROVIDE TRAFFIC CONTROL FOR THESE OPERATIONS IN ACCORDANCE WITH VWAPM.

INSTALL ADVANCE WARNING SIGNS ALONG GARDEN CITY BOULEVARD, YELLOW MOUNTAIN ROAD AND OTHER SIDE STREETS.

SET UP FLAGGING OPERATION IN ACCORDANCE WITH VWAPM TTC-23.0 AND TTC-28.0 AS SHOWN ON THE PLAN.

CONSTRUCT IMPROVEMENTS ALONG GARDEN CITY BOULEVARD FROM YELLOW MOUNTAIN ROAD TO APPROX. STA. 14+85.

GARDEN CITY BLVD. AND ALL SIDE STREETS SHALL BE OPENED TO TWO-WAY TWO-LANE TRAFFIC AT THE END OF EACH WORKDAY.

STAGE 4: REMOVE ALL TEMPORARY PAVEMENT MARKINGS AND PLACE FINAL PAVEMENT MARKINGS; PROVIDE TRAFFIC CONTROL FOR THESE OPERATIONS IN ACCORDANCE WITH VWAPM.

COMMONWEALTH OF VIRGINIA
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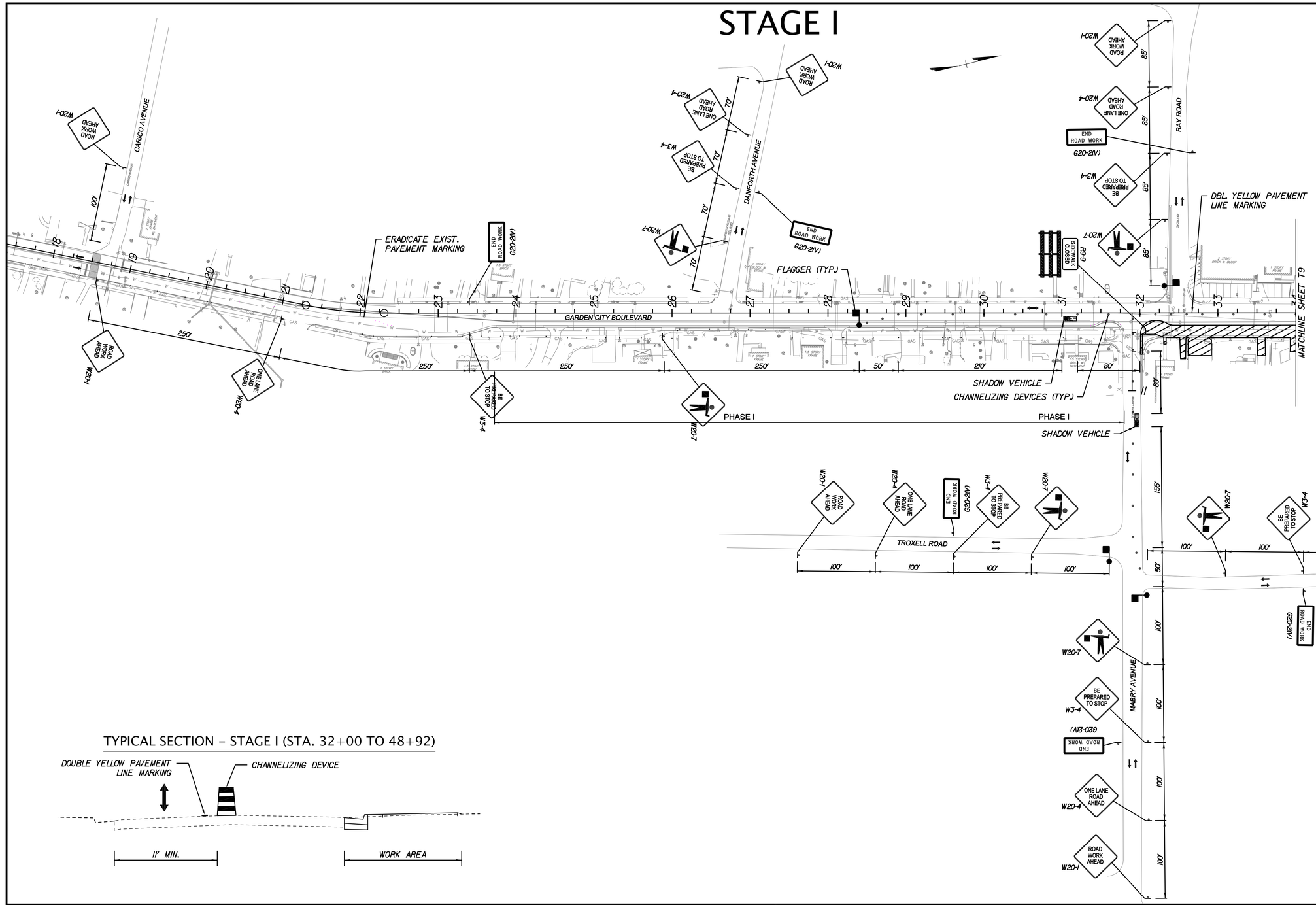
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed: AJK	DATE	SHEET NUMBER
Drawn: AJK	FEB 2015	T7
Checked:		

STAGE I



TYPICAL SECTION - STAGE I (STA. 32+00 TO 48+92)

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SCALE 0 60' 120'

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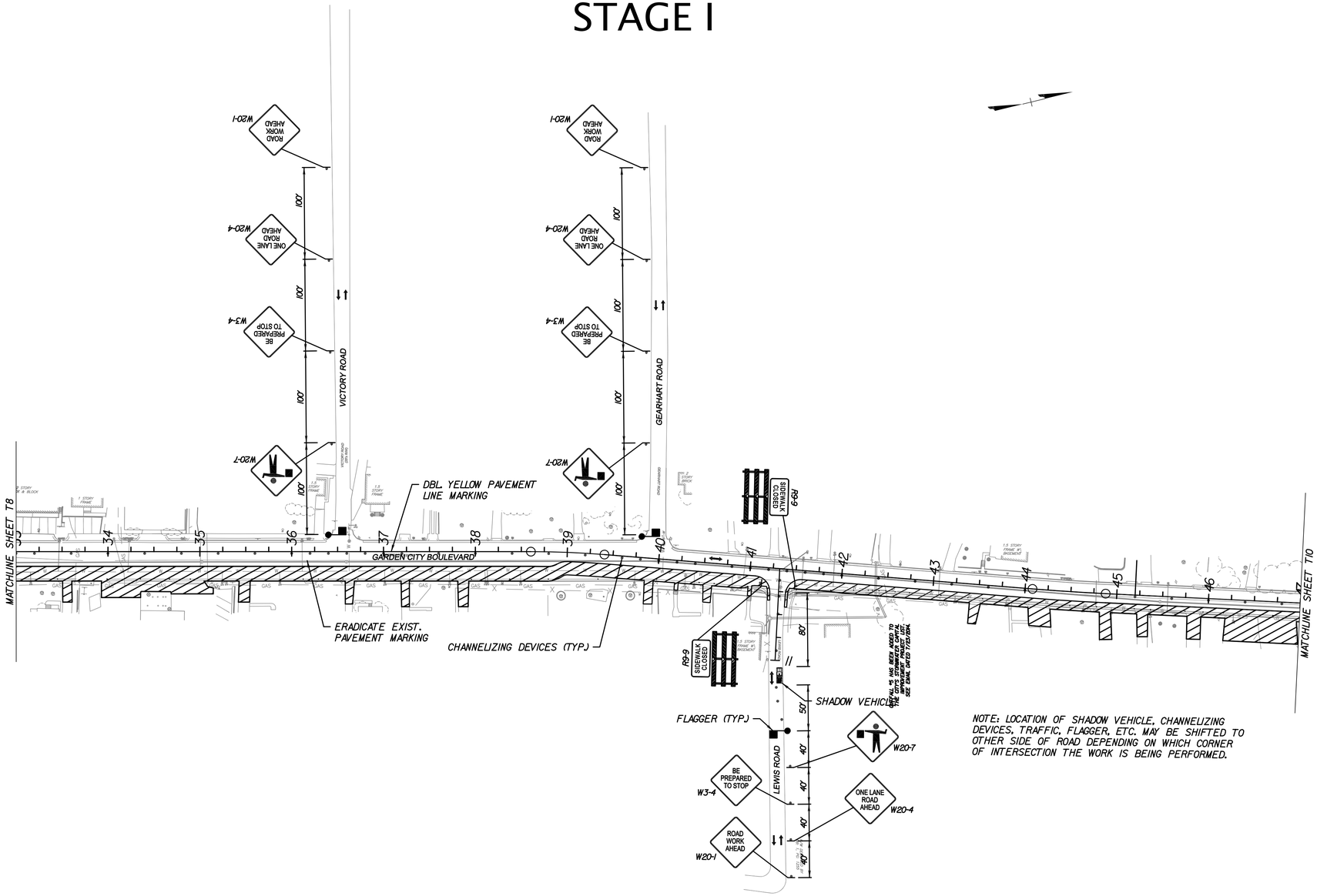
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	T8
Checked:	R.D.P.		

STAGE I



NOTE: LOCATION OF SHADOW VEHICLE, CHANNELIZING DEVICES, TRAFFIC, FLAGGER, ETC. MAY BE SHIFTED TO OTHER SIDE OF ROAD DEPENDING ON WHICH CORNER OF INTERSECTION THE WORK IS BEING PERFORMED.

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SCALE
0 60' 120'

ROADWAY ENGINEER

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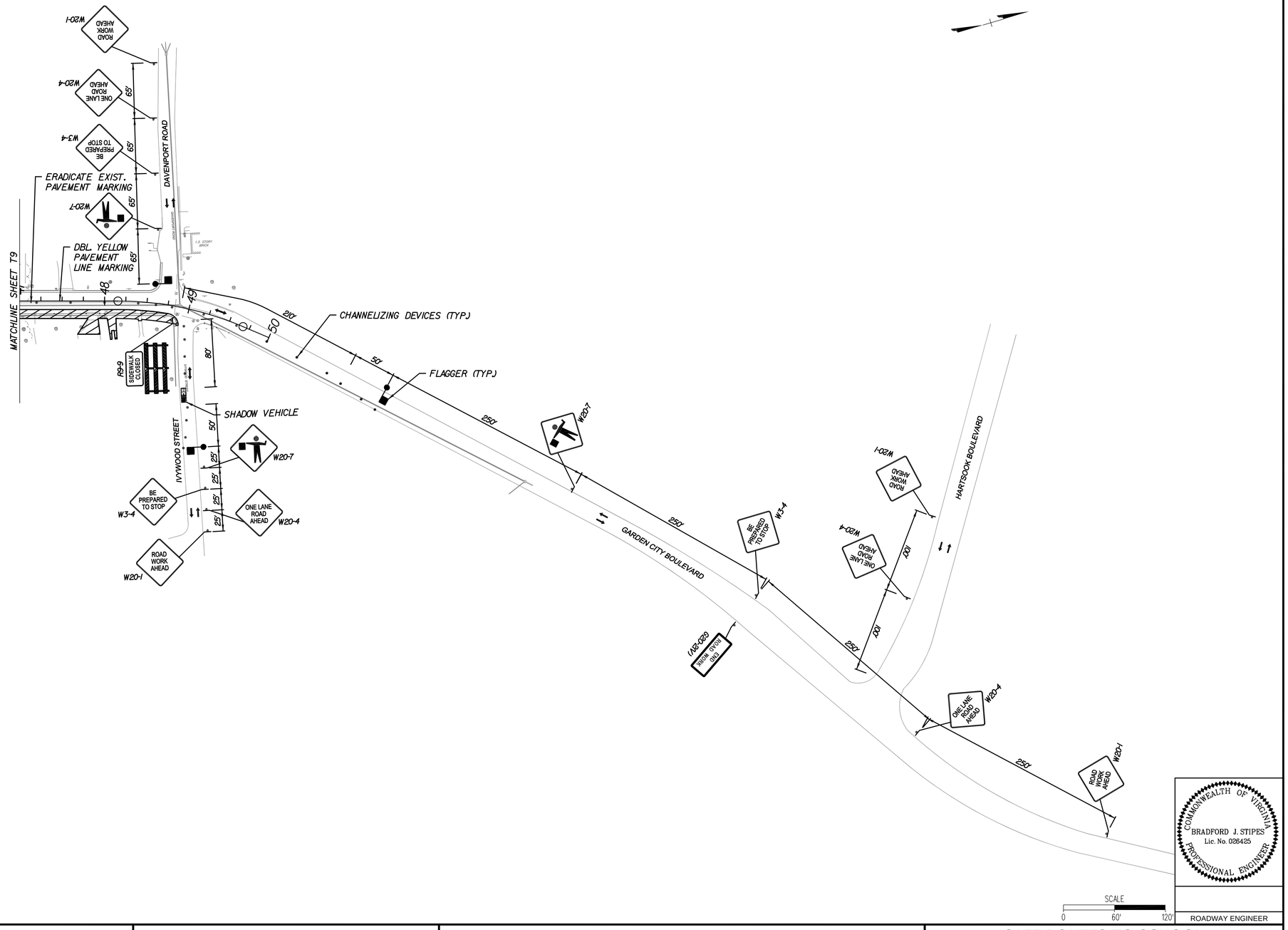
MAINTENANCE OF TRAFFIC PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T9
Checked: R.D.P.		

STAGE I



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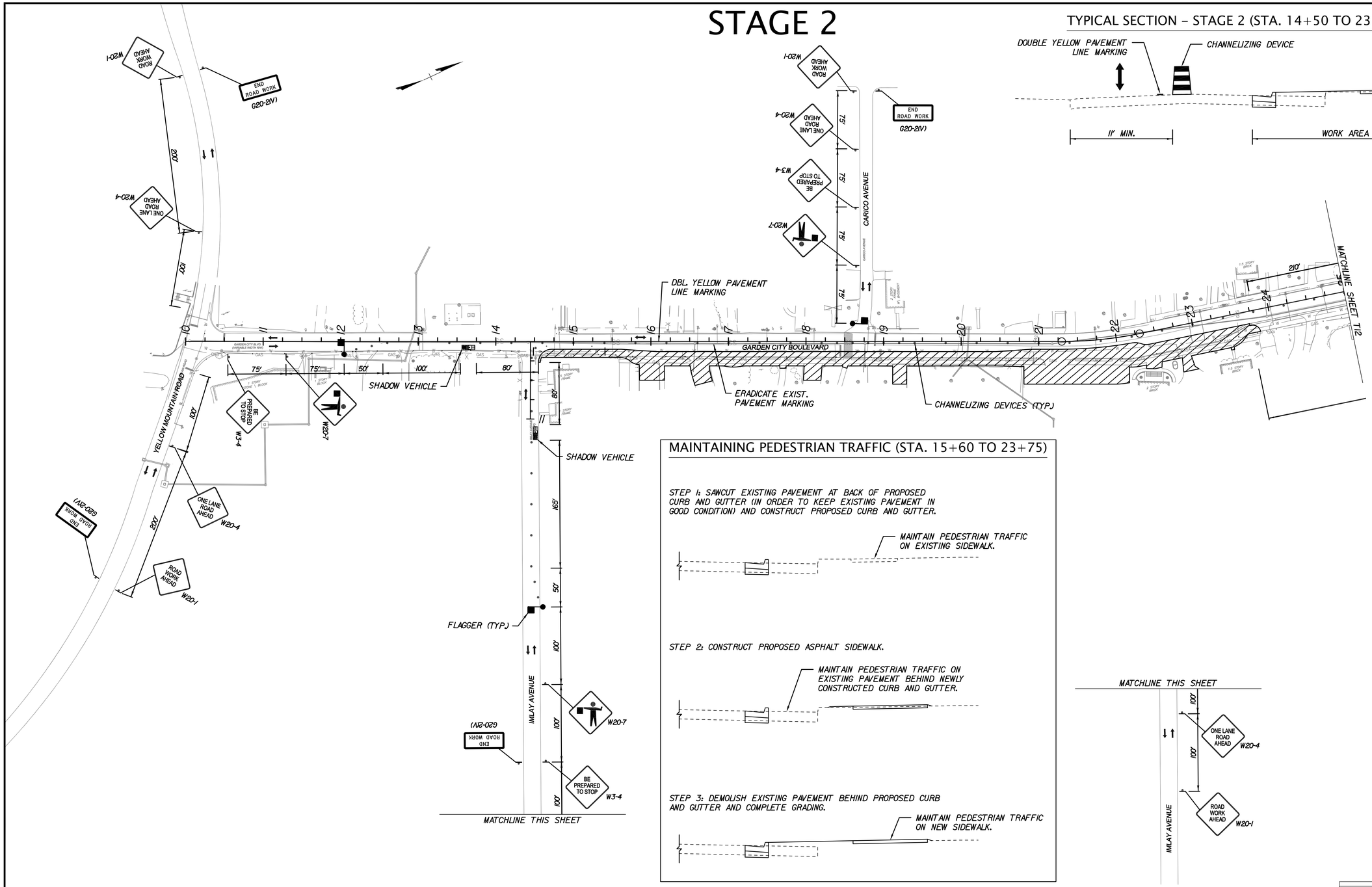
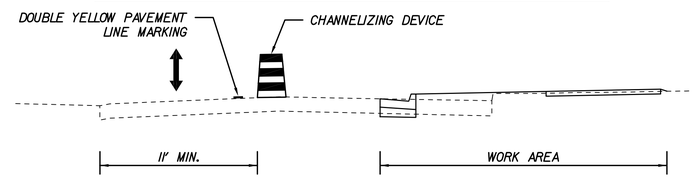
MAINTENANCE OF TRAFFIC PLAN

		DATE	SHEET NUMBER
Designed:	A.J.K.	FEB 2015	T10
Drawn:	R.D.W.		
Checked:	R.D.P.		

STAGE 2



TYPICAL SECTION – STAGE 2 (STA. 14+50 TO 23+75)



MAINTAINING PEDESTRIAN TRAFFIC (STA. 15+60 TO 23+75)

STEP 1: SAWCUT EXISTING PAVEMENT AT BACK OF PROPOSED CURB AND GUTTER (IN ORDER TO KEEP EXISTING PAVEMENT IN GOOD CONDITION) AND CONSTRUCT PROPOSED CURB AND GUTTER.

STEP 2: CONSTRUCT PROPOSED ASPHALT SIDEWALK.

STEP 3: DEMOLISH EXISTING PAVEMENT BEHIND PROPOSED CURB AND GUTTER AND COMPLETE GRADING.

COMMONWEALTH OF VIRGINIA
BRADFORD J. STIPES
Lic. No. 026425
PROFESSIONAL ENGINEER

SCALE
0 60' 120'

ROADWAY ENGINEER

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FAX: (540) 853-1364
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WORK AREA

CONSTRUCTION PREVIOUS STAGE

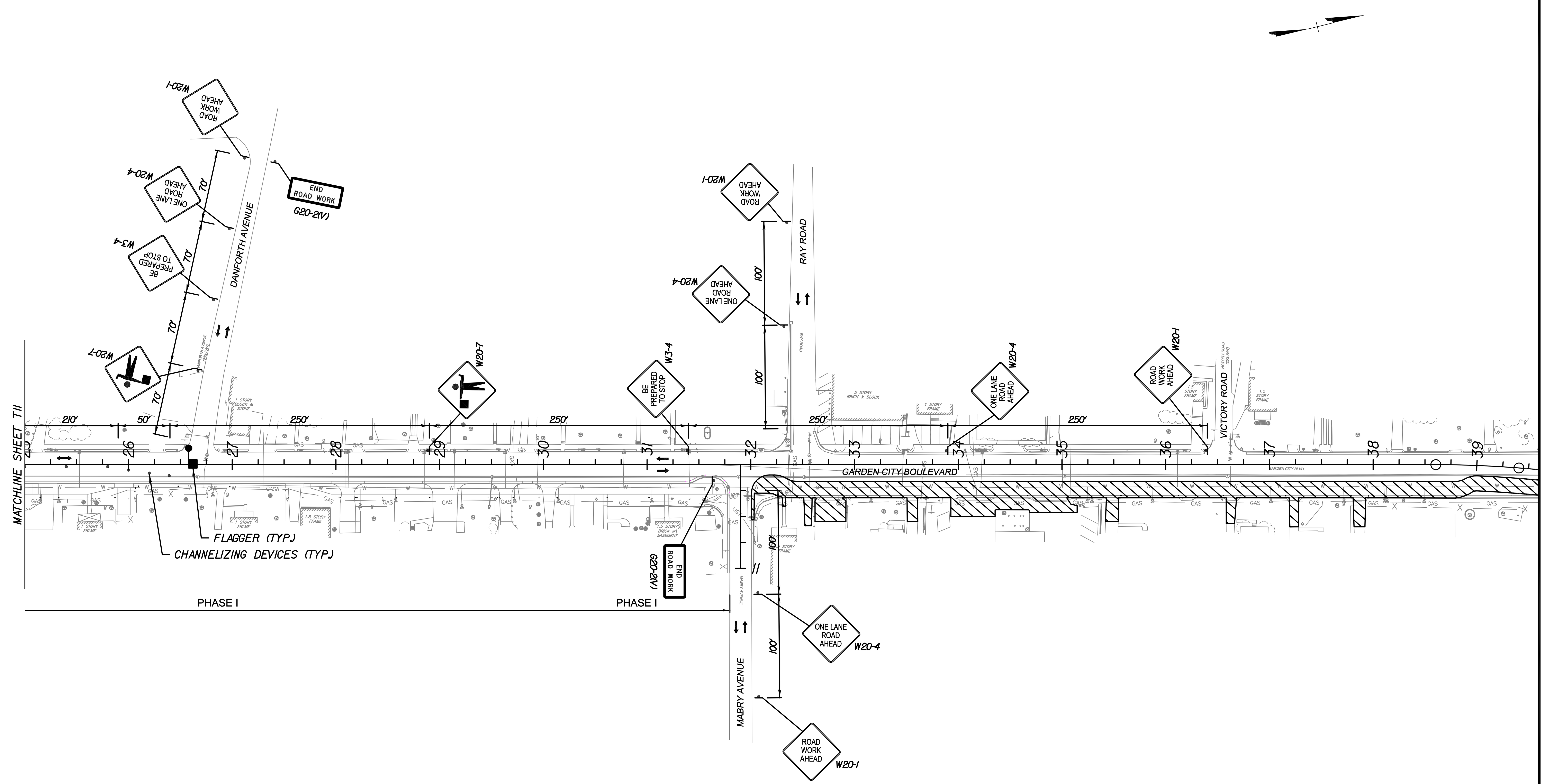
WR&A WHITMAN, REQUARDT & ASSOCIATES, LLP
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T11
Checked: R.D.P.		

STAGE 2



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PROFESSIONAL ENGINEER
ROADWAY ENGINEER

▨	WORK AREA
▧	CONSTRUCTION PREVIOUS STAGE

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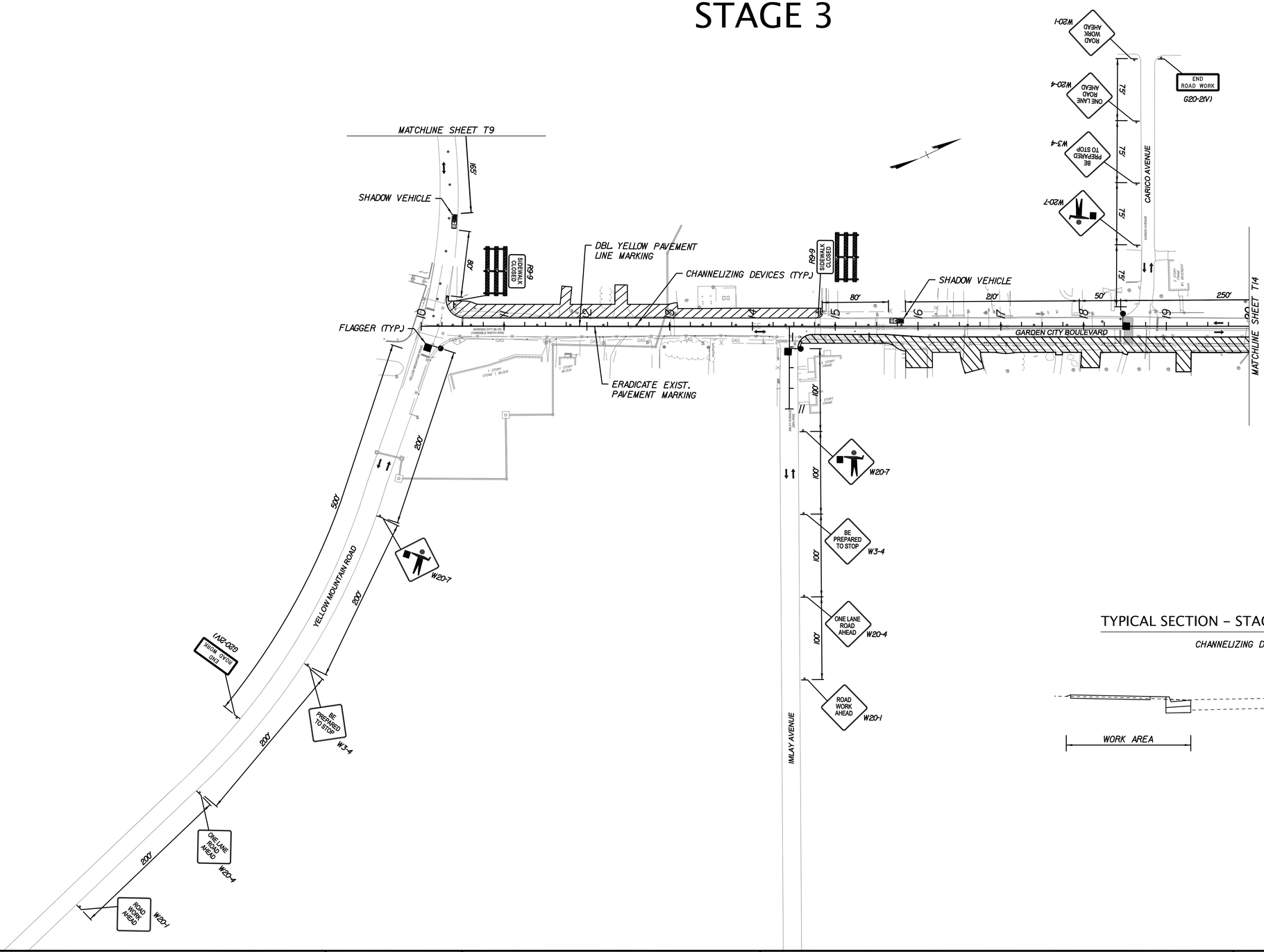
GARDEN CITY BOULEVARD

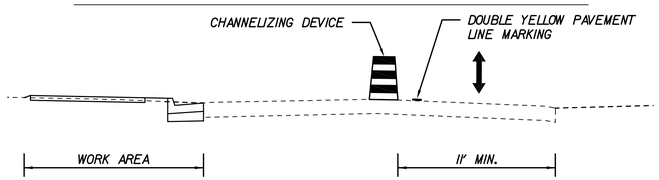
MAINTENANCE OF TRAFFIC PLAN

Designed:	A.J.K.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	T12
Checked:	R.D.P.		

STAGE 3



TYPICAL SECTION - STAGE 3 (STA. 10+25 TO 14+85)



BRADFORD J. STIPES
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PROFESSIONAL ENGINEER

SCALE
0 60' 120'

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WORK AREA

CONSTRUCTION PREVIOUS STAGE

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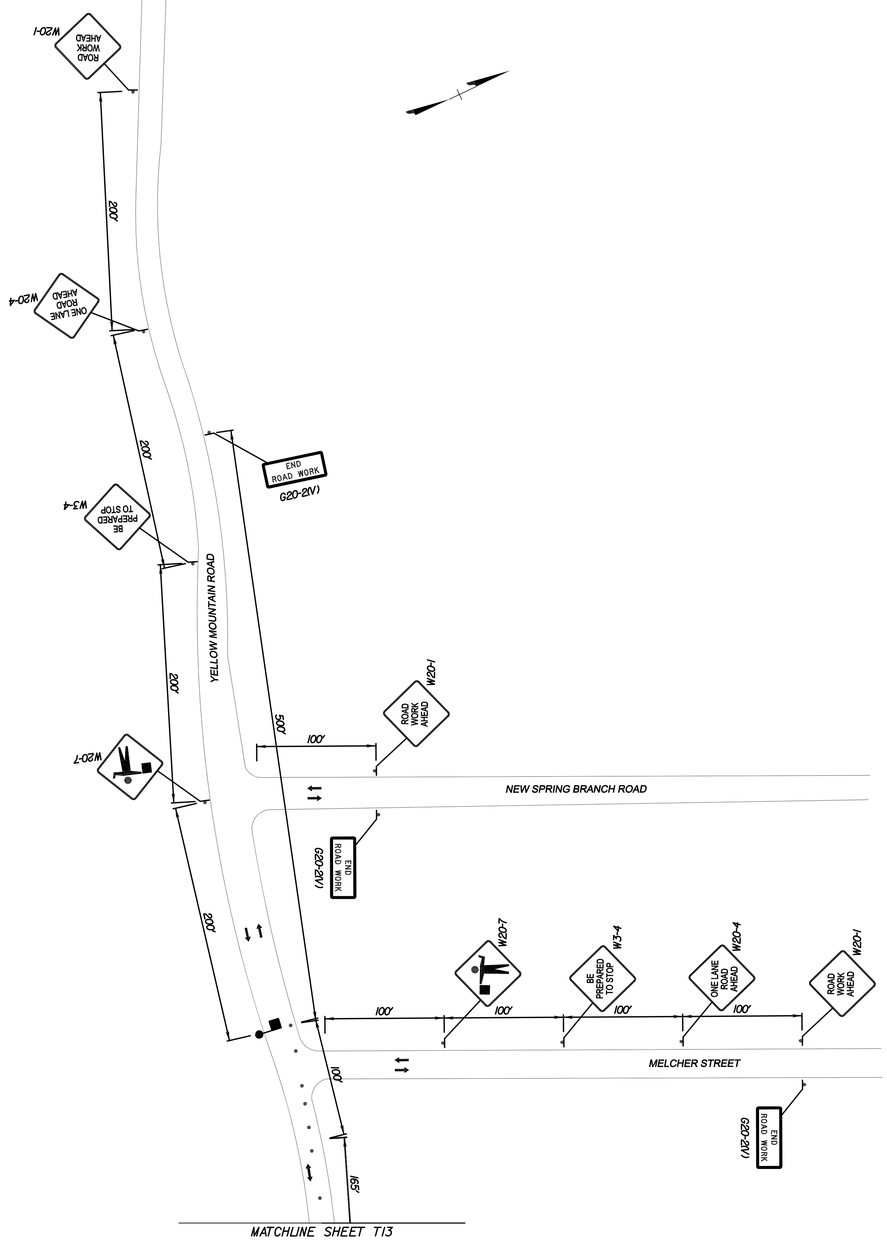
1700 KRAFT DRIVE, SUITE 1200
BLACKSBURG, VA 24060

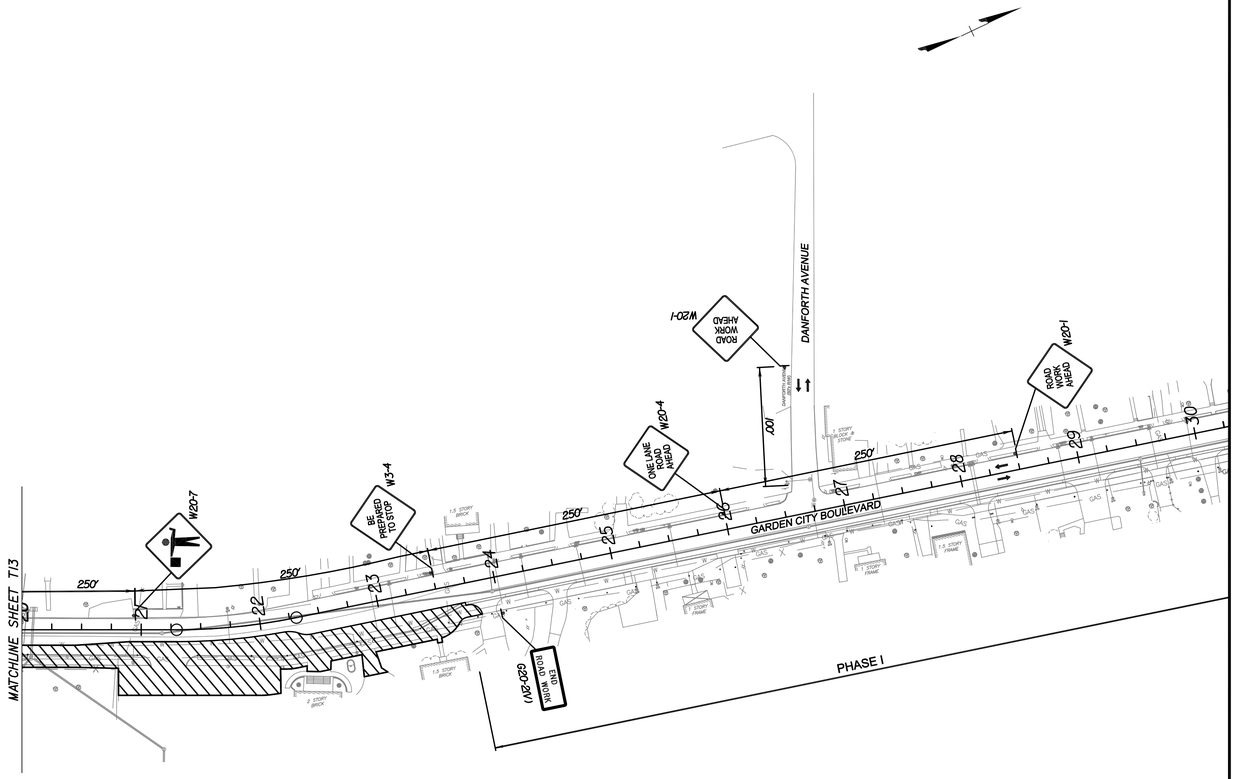
SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

MAINTENANCE OF TRAFFIC PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T13
Checked: R.D.P.		

STAGE 3





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GARDEN CITY BOULEVARD

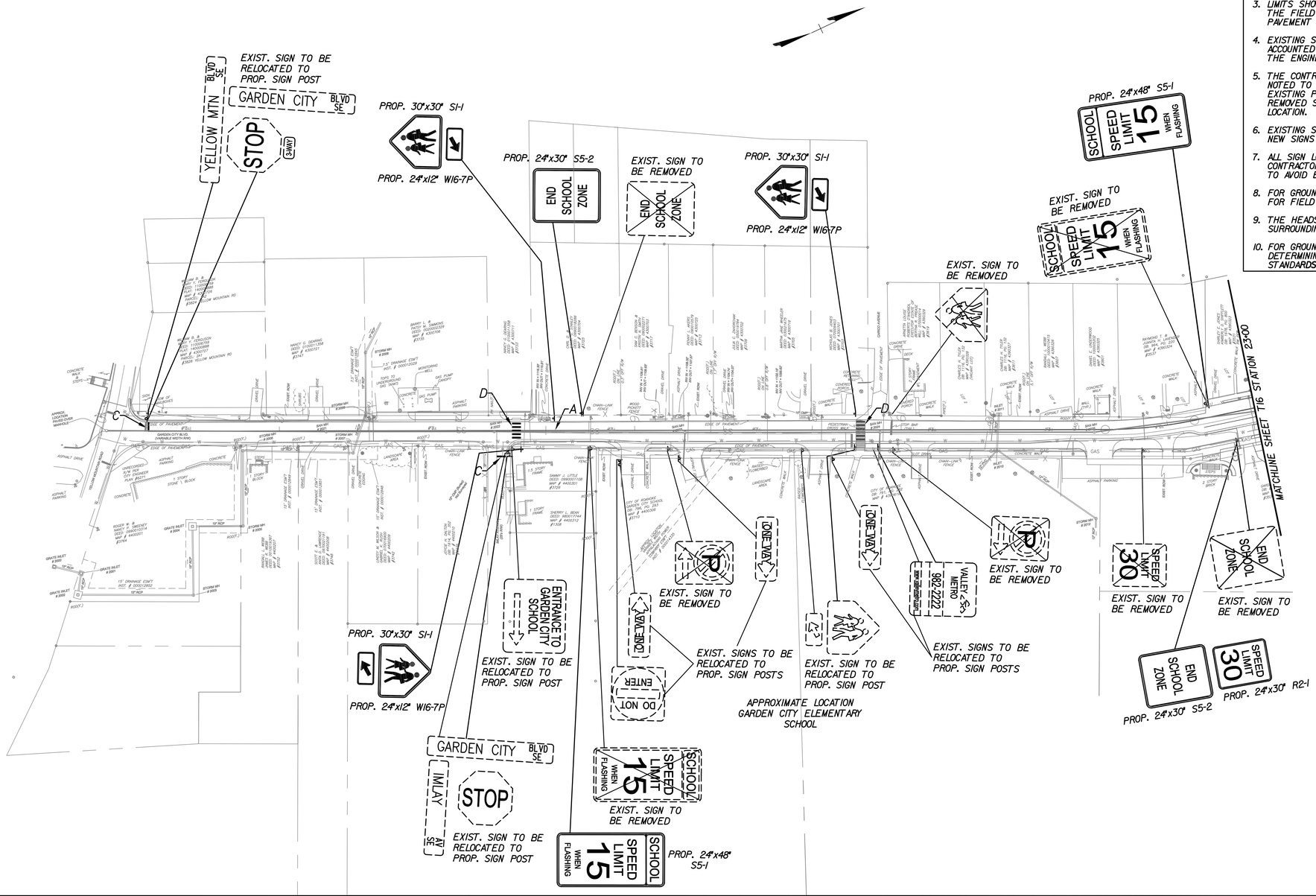
MAINTENANCE OF TRAFFIC PLAN

Designed: A.J.K.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T14
Checked: R.D.P.		

NOTE: FOLLOWING THE INSTALLATION OF PROPOSED CURB AND GUTTER, CONTRACTOR SHALL COORDINATE WITH CITY ENGINEER TO COORDINATE PAVEMENT MARKINGS TO BE INSTALLED BY CITY FORCES.

PAVEMENT MARKING LEGEND

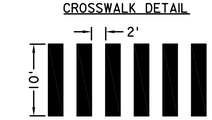
A. TYPE A, DOUBLE YELLOW PAVEMENT LINE MARKING, 4" WIDTH (4" SPACE)
B. TYPE A, WHITE PAVEMENT LINE MARKING, 4" WIDTH
C. TYPE A, WHITE PAVEMENT LINE MARKING, 24" WIDTH
D. TYPE A, WHITE PAVEMENT LINE MARKING, 24" WIDTH (SEE DETAIL)



GENERAL NOTES - SIGNING & PAVEMENT MARKINGS

1. ALL PROPOSED SIGNING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH EACH OF THE FOLLOWING MANUALS, OR THE MOST RECENT REVISION THERETO:
   A. 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
   B. 2011 VIRGINIA SUPPLEMENT TO THE MUTCD.
   C. 2007 VDOT ROAD AND BRIDGE SPECIFICATIONS.
   D. 2008 VDOT ROAD AND BRIDGE STANDARDS.
2. ANY EXISTING PAVEMENT MARKINGS THAT WILL CONFLICT WITH PROPOSED PAVEMENT MARKINGS SHALL BE COMPLETELY ERADICATED.
3. LIMITS SHOWN OF PROPOSED MARKINGS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO ENSURE THAT PROPOSED PAVEMENT MARKINGS CONTINUE UNTIL EXISTING PAVEMENT MARKING CAN BE MATCHED.
4. EXISTING SIGNS WITHIN THE LIMITS OF THE CONTRACT THAT HAVE NOT BEEN ACCOUNTED FOR IN THE PLAN SHALL BE RELOCATED OR REMOVED AS DIRECTED BY THE ENGINEER.
5. THE CONTRACTOR SHALL REMOVE THE PANEL, POST AND FOUNDATION OF ALL SIGNS NOTED TO BE REMOVED. FOR SIGN PANELS TO BE RELOCATED ON NEW POSTS, THE EXISTING POST AND FOUNDATION SHALL BE REMOVED. ALL COMPONENTS THAT ARE REMOVED SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR AT AN OFF-SITE LOCATION.
6. EXISTING SIGN PANELS SCHEDULED TO BE REUSED/RELOCATED MAY BE REPLACED WITH NEW SIGNS AT THE DISCRETION OF THE PROJECT ENGINEER.
7. ALL SIGN LOCATIONS SHALL BE FIELD REVIEWED BY THE ENGINEER WITH THE CONTRACTOR PRIOR TO ANY WORK STARTING. SIGN LOCATIONS SHALL BE FIELD LOCATED TO AVOID EXISTING UTILITIES.
8. FOR GROUND-MOUNTED SIGN STRUCTURES THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING POST LENGTHS PRIOR TO ORDERING ANY MATERIALS.
9. THE HEADS OF ALUMINUM POP FASTENERS SHALL MATCH THE COLOR OF THE SURROUNDING AREA.
10. FOR GROUND MOUNTED SIGNS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE CORRECT POST SIZE IN ACCORDANCE WITH VDOT ROAD AND BRIDGE STANDARDS.

CROSSWALK DETAIL



CROSSWALK LINE WIDTH - 24' WHITE LINE, TYPE A

SCALE
0 60' 120'

COMMONWEALTH OF VIRGINIA
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SAFE ROUTES TO SCHOOL
GARDEN CITY BOULEVARD

SIGNING AND PAVEMENT MARKING PLAN

Designed: J.P.H.	DATE	SHEET NUMBER
Drawn: R.D.W.	FEB 2015	T15
Checked: R.D.P.		

NOTE: FOLLOWING THE INSTALLATION OF PROPOSED CURB AND GUTTER, CONTRACTOR SHALL COORDINATE WITH CITY ENGINEER TO COORDINATE PAVEMENT MARKINGS TO BE INSTALLED BY CITY FORCES.

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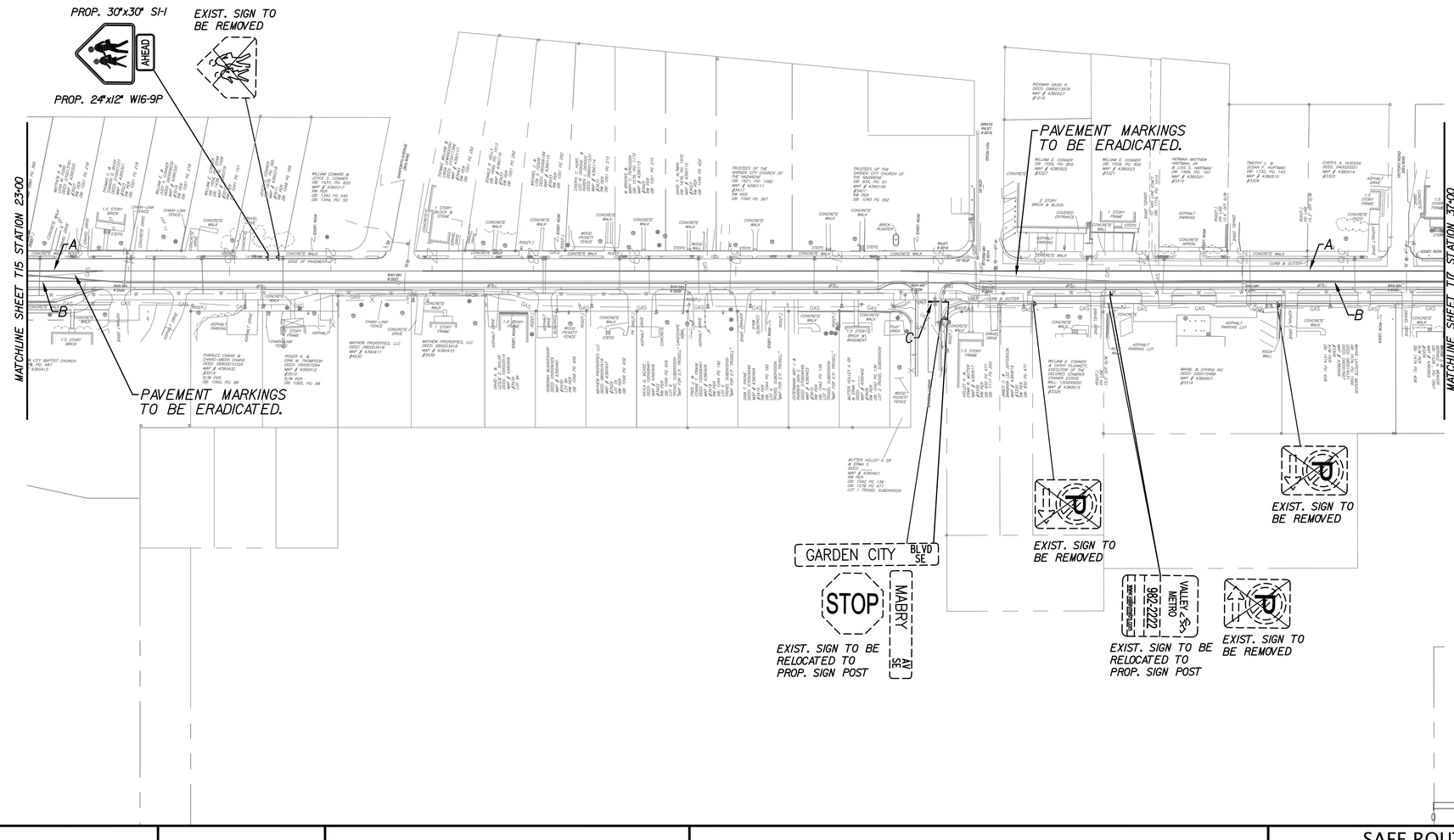

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SIGNING AND PAVEMENT MARKING PLAN

Designed:	J.P.H.	DATE	SHEET NUMBER
Drawn:	R.D.W.	FEB 2015	T16
Checked:	R.D.P.		

NOTE: FOLLOWING THE INSTALLATION OF PROPOSED CURB AND GUTTER, CONTRACTOR SHALL COORDINATE WITH CITY ENGINEER TO COORDINATE PAVEMENT MARKINGS TO BE INSTALLED BY CITY FORCES.

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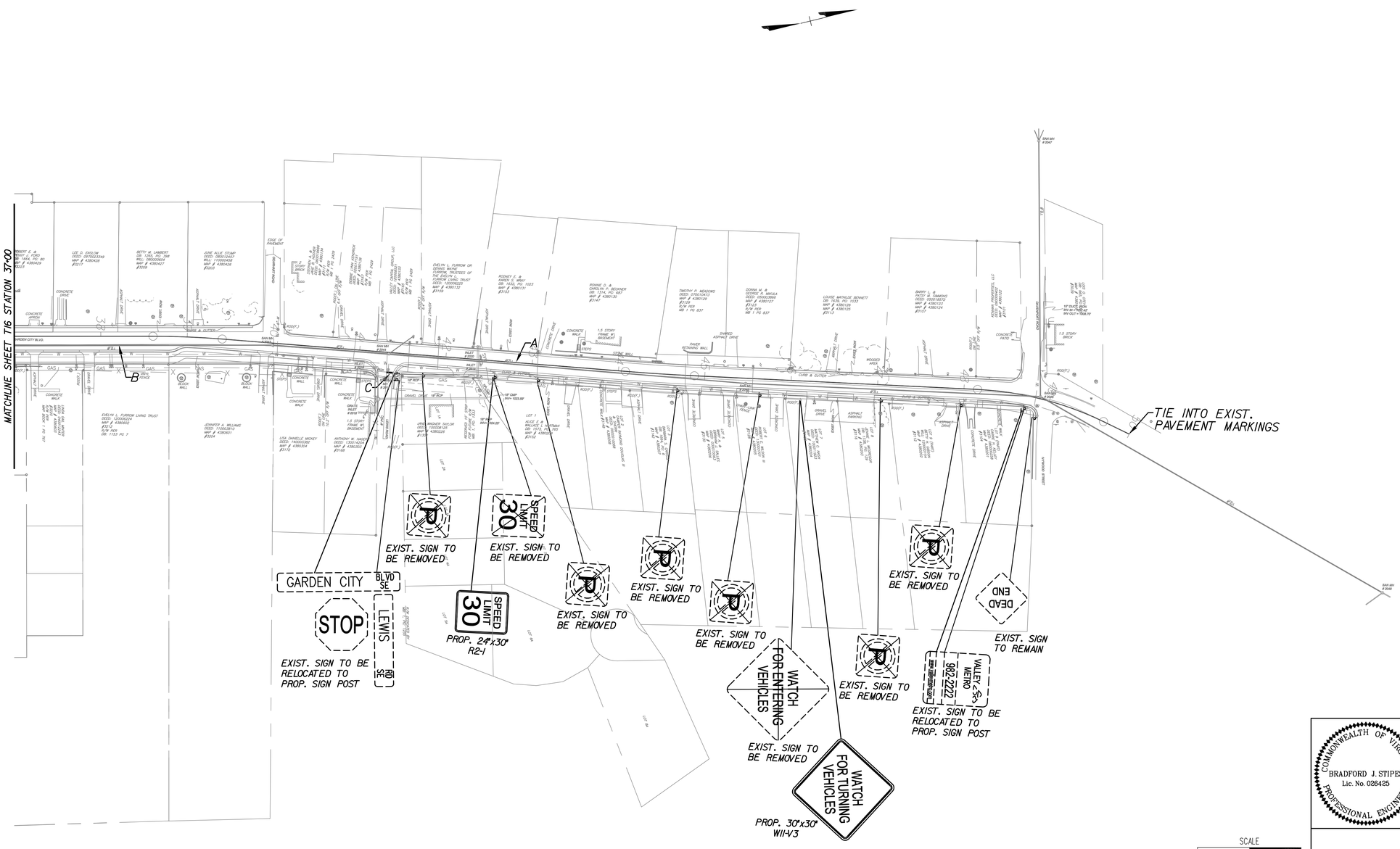

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SIGNING AND PAVEMENT MARKING PLAN

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Drawn: R.D.W.	FEB 2015	T17
Checked: R.D.P.		